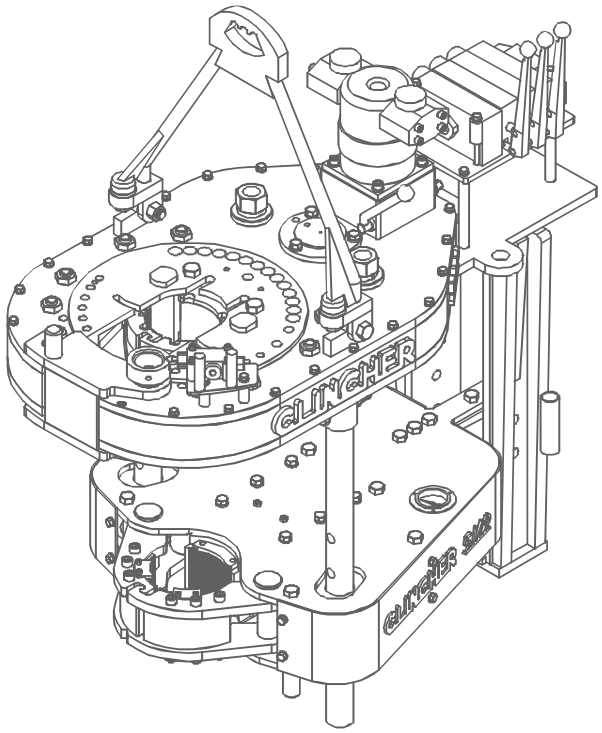
SUPERIOR
Manufacturing & Hydraulics

TECHNICAL MANUAL

5 1/2" CLINCHER® LOCKJAW™ TONG

AND

5 1/2" & 6 1/2" LOCKJAW™ BACKUP



COVERS

TONG MODELS

CLJ5500-03 / CLJ5500-04

BACKUP MODELS

BUCS5500 / BUC6250-01

HANGER ASSEMBLIES

BUCS5509

MKBUCS6250

4225 Highway 90, East
Broussard, Louisiana 70518
Phone: (337) 837-8847
Fax: (337) 837-8839
www.superior-manf.com

Published 12/1999

SUPERIOR
Manufacturing & Hydraulics

TECHNICAL MANUAL

5 1/2" CLINCHER® LOCKJAW™ TONG

AND

5 1/2" & 6 1/2" LOCKJAW™ BACKUP

COVERS

TONG MODELS

CLJ5500-03 / CLJ5500-04

BACKUP MODELS

BUCS5500 / BUC6250-01

HANGER ASSEMBLIES

BUCS5509

MKBUCS6250

4225 Highway 90, East
Broussard, Louisiana 70518
Phone: (337) 837-8847
Fax: (337) 837-8839
www.superior-manf.com

Published 12/1999

©Copyright, 1999, SUPERIOR Manufacturing & Hydraulics, Inc. All rights reserved. This document is the property of SUPERIOR Manufacturing & Hydraulics, Inc. It is supplied as reference information to users of our products. This document is considered confidential and is not to be disclosed, copied or reproduced, transmitted, transcribed in any form or stored in any type of system without the express written consent of SUPERIOR Manufacturing & Hydraulics, Inc.

CLINCHER®, **LOCKJAW™** & **GRIT FACE™** are trademarks of SUPERIOR Manufacturing & Hydraulics, Inc.

The products described in this manual are covered by U.S. and foreign Patents and/or pending Patent Applications.

This manual is not a controlled document and is subject to revision without notice. To receive updates and insure you have access to the latest information concerning the 5 1/2" **CLINCHER® LOCKJAW™** Tong and Backup, we request you complete this form and return the lower half to SUPERIOR Manufacturing and Hydraulics by mail or facsimile. Access to our manuals can also be acquired through our web site www.superior-manf.com. Select the tab '**CLINCHER®** Products', select the equipment from the list to get Specs page, select the tab 'Download Manual'.

Name: _____
Company: _____
Address: _____
Address: _____
City: _____ **State:** _____
Postal Code: _____ **Country:** _____
Telephone: _____ **Fax:** _____

Tong Model No.: _____ **Serial No.:** _____
Backup Model No.: _____ **Serial No.:** _____
Assembly Date: _____

- - - -

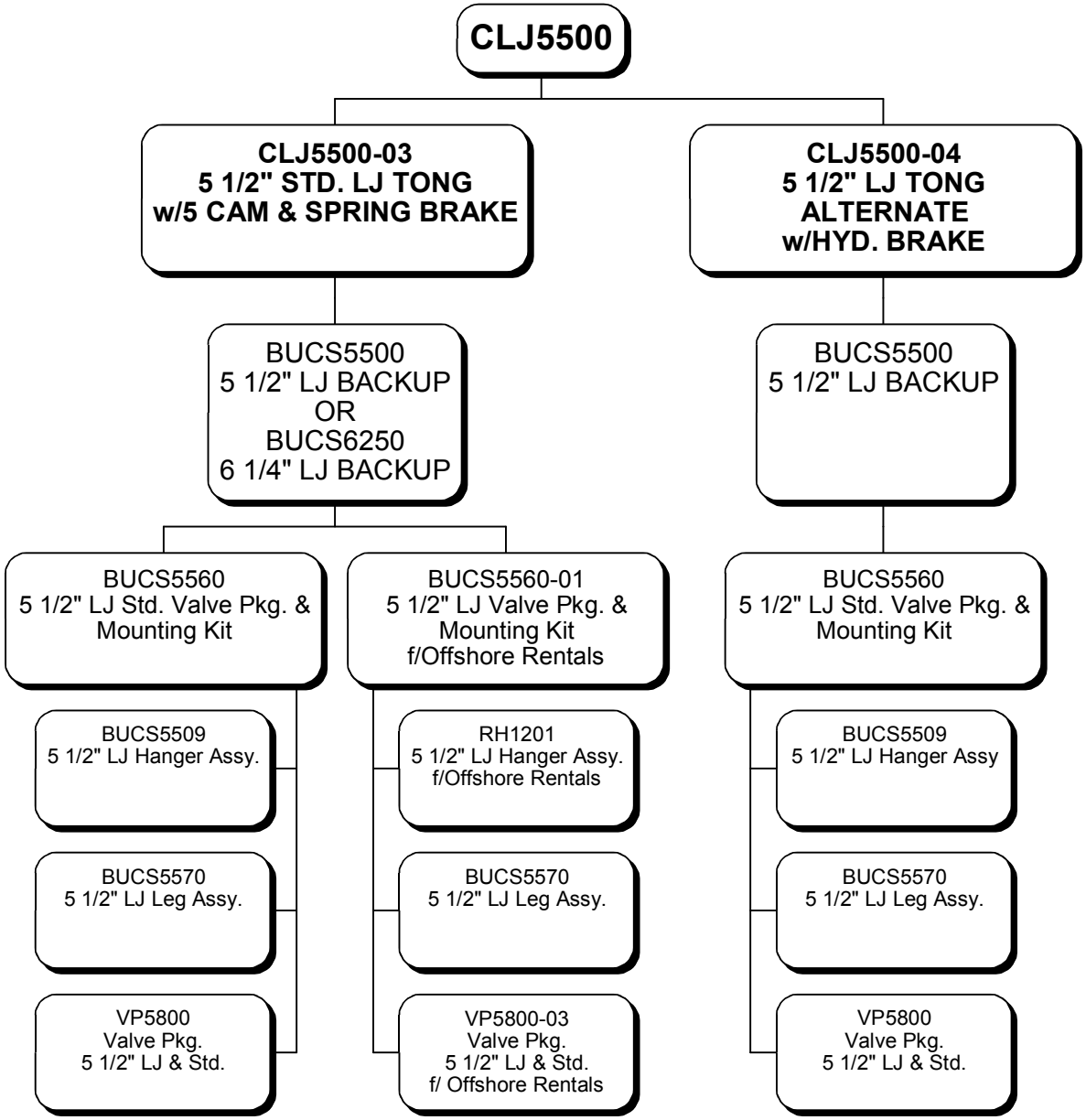
TABLE OF CONTENTS

Hazard Warnings	*1*
Description, Features, & Specifications	*2*
Wrap Around Die Selection	*3*
Assembly Instructions	*4*
Operational Instructions	*5*
Maintenance Instructions & Trouble Shooting	*6*
Spare Parts Recommendations & Parts Lists	*7*
Accessories and Options	*8*
LOCKJAW™ TONG Illustrations	*9*
LOCKJAW™ BACKUP and Mounting Kit Illustrations	*10*
Lift Cylinder	*11*
Load Cells and Torque Gauges	*12*
Motor Service Manual	*13*
Valve Manual	*14*

5 1/2" CLINCHER® LOCKJAW™ TONG and 5 1/2" LOCKJAW™ BACKUP

REVISION TABLE

Section	*Page*	*Date*	*Description*
1	3	12/99	Added Cross Safety Warning
2	1-2, 5-6	12/99	Revised Dwg. Illustration CLJ5500 & BUCS5500; corrected typo on Specs; added Illustration Top & Bottom Cage Plate/Gear Ring/Jaws; Rev. Schematic
3	1, 3-6	12/99	Clarified paragraph 1, The tong's rear die is mounted on the rear jaw . . . Added Die Tech Update
4	1	12/99	Corrected torque for 7/8-14 NC fasteners for dumbell rollers
7	1-39	12/99	Added Rear Jaw Springs to Spare Parts List; added Table of Contents for Parts Lists; added Parts List CLJ5500-02; revised Parts List CLJ5500-03; added Parts List 51047A, 58018A, 58070, & SLV1000-01; revised Parts List BUCS5500; added Parts List BUCS5560, BUCS5509, BUCS5570, BUCS5571, & VP5800
8	4, 7-24	12/99	Revised Dwg. ILL1080; added Haskel M36 Pump Spec Sheets; added Swagelok R3A Relief Valve info.
9	1, 3, 7, 11, 12, 16, 23, 24, 26	12/99	Added Table of Contents for Tong Illustrations; Revised Dwgs: Top Plate Assy.; Spring Brake Arm Assy. / Figure 1; Top Cage Plate Assy. / Figure 5; Bottom Cage Plate Assy. / Figure 6; Pinion Gear Assy. w/Encoder / Figure 9b; Cylinder Mount Assy. / Figure 17; Left & Right Hydraulic Brake Arm Assy. / Figure 18; Door Switch Assy. / Figure 20
10	1, 3-7	12/99	Added Table of Contents for Backup & Mounting Kit Illustrations; Revised Dwgs: 5 1/2" **LOCKJAW™** Backup Assy. / BUCS5500; Right Door Assy.; Left Door Assy.; BUCS5532 / Cylinder Assy.; Mounting Kit & Valve Package / Assy. No. BUCS5560;
13	5-10	12/99	Revised Data Sheets 0150002 from Rineer Hyd. 15 Series Two Speed Motor, added Dwg. 0150049
13	24	12/99	Rev. Dwg. 0150055 from Rineer Hyd. 15 Series Two Speed Stacked Motor
N/A	N/A	05/02	Added CLJ5500 Flow Chart behind Revision Table
1	1-2	05/02	Clarified suspension cable breaking strength to be a 31 ton minimum. Change diameter of snubbing line wire cable from 5/8" to 1" & clarified breaking strength to be 51.7 ton minimum.
2	2A, 6	05/02	Added Performance Chart. Revise Hyd. Schematic
3	3-6	05/02	Die Tech Update, ver 5.0
4	1, 3, 10	05/02	Clarified Caution: Do not use Teflon tape. Added 3/8-16 Set Screws with torque notation. Corrected typos paragraph 1 and 1-41.
7	3-45	05/02	Revise Table of Contents. Removed CLJ5500-02; Added CLJ5500-04, 45067-S6, 45091, 51035B, 51074. Replaced 51047A with 58047A. Added 58050, KITBRG-03, BUCS5500-01, BUCS5505, BUCS5506, BUCS5532, ASAP2184, SLV1000-04, KITBOLT-19, KITFIT-19. Removed BUCS5571.
8	4	05/02	Revised Brake Cyl. Hyd. Schematic
9	1, 5, 11, 12, 14-16, 26, 30	05/02	Revised Table of Contents. Added Figure 19B & Figure 23. Rev. Dwgs. Spring Brake Assy. Bottom View, Figure 5, 6, 8, 9, 9B, 15, 16, 19, & 22.
10	1, 6-8	05/02	Revised Table of Contents. Added Valve Bank Assy. Rev. Dwgs. Cyl. Assy., Mnt. Kit & Valve Pkg.
11	1	05/02	Replaced Obsolete Cyl. Dwg. & LCR100 Dwg with LCR100-A rev1 Dwg.
Cover Title Pg.	Cover Title Pg.	11/06	Removed ISO emblems.
3	3-6		
2	2, 6	11/06	Revised Specifications and Schematic.
3	0	11/06	Added Strip Die chart.
4	1	11/06	Revised Torque Chart.
6	6.1	11/06	Added Garlock DU Bearing Dry Wear Process.
7	1	11/06	Revised Spare Parts List.
9	1, 11-12.1, 20, 21.1, 26.1, 28 & 29	11/06	Added Motor Assy. & Bridle Assy. 2nd Generation. Revised illustrations Top Cage Plate Assy., Bottom Cage Plate Assy., Rear Jaw Assy., Clutch Box Assy. 2nd Generation, & Side Handle Assy.
10	3, 6 & 8	11/06	Revised illustrations Backup Assy., Cylinder Assy., & Valve Bank Assy.


CLJ5500
CLJ5500-03
5 1/2" STD. LJ TONG
w/5 CAM & SPRING BRAKE
CLJ5500-04
5 1/2" LJ TONG
ALTERNATE
w/HYD. BRAKE
BUCS5500
5 1/2" LJ BACKUP
OR
BUCS6250
6 1/4" LJ BACKUP
BUCS5500
5 1/2" LJ BACKUP
BUCS5560
5 1/2" LJ Std. Valve Pkg. &
Mounting Kit
BUCS5560-01
5 1/2" LJ Valve Pkg. &
Mounting Kit
f/Offshore Rentals
BUCS5560
5 1/2" LJ Std. Valve Pkg. &
Mounting Kit
BUCS5509
5 1/2" LJ Hanger Assy.
BUCS5570
5 1/2" LJ Leg Assy.
VP5800
Valve Pkg.
5 1/2" LJ & Std.
RH1201
5 1/2" LJ Hanger Assy.
f/Offshore Rentals
BUCS5570
5 1/2" LJ Leg Assy.
VP5800-03
Valve Pkg.
5 1/2" LJ & Std.
f/ Offshore Rentals
BUCS5509
5 1/2" LJ Hanger Assy
BUCS5570
5 1/2" LJ Leg Assy.
VP5800
Valve Pkg.
5 1/2" LJ & Std.

5 1/2" CLINCHER® LOCKJAW™ Tong and Backup

HAZARD WARNING

Nomenclature used in this manual:

WARNING	concerns an operating procedure or practice that, if not strictly observed, can result in injury to personnel or loss of life
Caution	concerns an operating procedure or practice that, if not strictly observed, can result in damage to or destruction of equipment
Note	concerns an operating procedure or practice that needs highlighting

CLINCHER® LOCKJAW™ Tongs and Backups are manufactured to provide a means of making up or breaking out high torque tubular connections. They utilize high pressure hydraulic fluid power which can cause the tong to move suddenly and with great force if the tong is not properly rigged up and operated. **CLINCHER®** Tongs and Backups contain rotating and reciprocating parts which can severely or fatally injure personnel who are operating, repairing, or near this equipment during its operation. **WARNING: Tongs and Backups are not to be operated by untrained personnel or personnel with diminished physical or mental capacity. No work of any type, including changing of dies, is to be carried out while the tong and backup are connected to any hydraulic power unit.**

CLINCHER® LOCKJAW™ Tongs and Backups are heavy tools. They should be suspended from a secure, high strength 7/8" 1 WRC minimum diameter wire cable with a 31 ton minimum breaking strength. The wire rope should be hung as close to the center of the wellbore as possible, without interfering with drilling equipment operation, to allow the tong to be readily swung into the working position. Vertical position control should be achieved by means of a **CLINCHER®** hydraulically operated lift cylinder/spring hanger. **WARNING: Users must insure the entire suspension system including cables, rig mounting points, lift cylinders, tong lifting brackets/bridles, winches, pulleys, counter weights, etc., are capable of handling the static weight of the tong and backup plus any loads which could be transferred to it during the makeup or breakout process PLUS any shock loads which may be seen during operation. This system must readily allow downward movement equal to a minimum of the thread makeup distance to avoid overloading the suspension system and/or damage to equipment.**

A 1" IWRC minimum diameter wire cable with a 51.7 ton minimum breaking strength or better, should be attached at a 90 degree angle to the tong and at the same level to insure proper readout of torque indicator. A SNUBBING LINE should always be attached even when an integral backup is in use to provide additional safety in the event of a backup slippage. **WARNING: Users must provide a means of safely controlling the tong and backup movements in all directions when it is in use. Failure to account for its size, weight, movement and the amount of torque developed could result in personnel injury or death.**

5 1/2" CLINCHER® LOCKJAW™ Tong and Backup

HAZARD WARNING

CLINCHER® Tongs and Backups utilize high pressure hydraulic fluids. Portions of the tong and backup, control valves, hydraulic lines and cylinders may contain high pressure fluid even when the power unit is de-energized and the fluid supply hoses are disconnected. During normal operation the temperature of the hydraulic fluids as well as hoses, piping, valves, etc., can rise to a level which can cause burns. **WARNING: Personal protective gear including safety glasses, face shields, protective gloves and protective clothing must be worn to guard against the hazards of high pressure fluids. Tight fitting clothing is required to prevent entanglement in rotating components. These tools should be serviced by thoroughly trained and qualified hydraulic technicians using procedures to safely insure hydraulic pressure is bled from these circuits.**

The **CLINCHER® LOCKJAW™** Tong is equipped with a door interlock system which prevents tong rotation whenever the door is open. This system is to be tested before each mobilization and at every shift change. Should this system be determined to be inoperative, the tong is to be removed from service and tagged as ***in-operative*** until repairs are made. **CAUTION:** Operating the tong with the door in the open position could result in severe damage to the equipment and will void all manufacturer warranties. **WARNING: Operating the tong with the door open by means of a defective or bypassed door interlock system exposes the operator and nearby personnel to potentially fatal hazards.**

No attempt should be made to operate the **CLINCHER® LOCKJAW™** Tong and Backup for any purpose other than which it is intended. This system is capable of generating very large clamping forces and torsional loads which, if improperly applied or controlled, could result in damage to the tubular, to the tong and backup, or could possibly result in injury or death of personnel. Do not attempt to operate the unit without correct dies and the proper size tubular being in the tong and backup. See Section 3 for more information concerning the selection and use of dies.
CAUTION: Operating this equipment without the correct size, type, and orientation of dies can result in damage to the equipment or tubulars being handled.

HYDRAULIC PRODUCT SAFETY

WARNING: Valve lever (spool) may "stick" (not center) under certain conditions allowing the hydraulic equipment to continue to operate and could cause serious injury, death or equipment failure.

VALVE SAFETY: Read and follow instructions carefully. Failure to observe instructions and guidelines may cause serious injury, death or equipment failure. A sticking valve (spool bind) may be caused by one or more of the following factors:

DIRTY OIL: Oil must be filtered to a minimum of 25 microns. Filters should be changed regularly - spin-on types after 50 hours of initial use and then after every two hundred fifty hours of use. Use of a condition indicator is recommended. Consult your tractor or implement owner's manual for filtration and changing recommendations for internal systems.

OIL REQUIREMENTS: Premium quality anti-wear type oil with a viscosity between 100 and 200 SSU at operating temperatures. Certain synthetic oils may cause spool seals to swell and the valve to stick. If in doubt, call CROSS Engineering.

IMPROPER HOOK UP OR MOUNTING: Always use the proper size fittings. Hook up "in" & "out" as noted on the valve body. Do not overtorque pipe fittings. Mounting surfaces should be flat and care should be used when tightening mounting bolts. Over-tightened bolts can cause spool bind and casting breakage. When hooking a valve in series, always use a power beyond sleeve. Consult your tractor or implement manual to make sure you have the proper quick disconnect line connected to the inlet of the remote valve.

MISAPPLICATION: Always use the proper valve for the job. CONVERTA, CD, CS or CA valves should never be used for metered heavy load lifting - loaders or similar applications. Use an open center valve for open center applications and a closed center valve for closed applications. If in doubt, check with your tractor dealer. Contact CROSS if the valve allows the hydraulic equipment to creep excessively.

MAINTENANCE: Make sure all bolts are tightened and torqued to the recommended specification. Bent or broken parts should not be used. Replace immediately. Always use exact replacements. Always protect valve spool from paint overspray.

Faulty quick disconnects can cause high back pressures and sticking spools. Check quick disconnects periodically to make sure they are functioning properly. If valve spool does not center or appears to stick, do not use!

PUMPS & MOTORS SAFETY:

A relief or bypass in your hydraulic system is necessary to prevent pump from breakage due to overpressurization. Use correct fittings and proper oil as noted in the technical service manual packed with each unit. Change oil as recommended by your implement or tractor manufacturer.

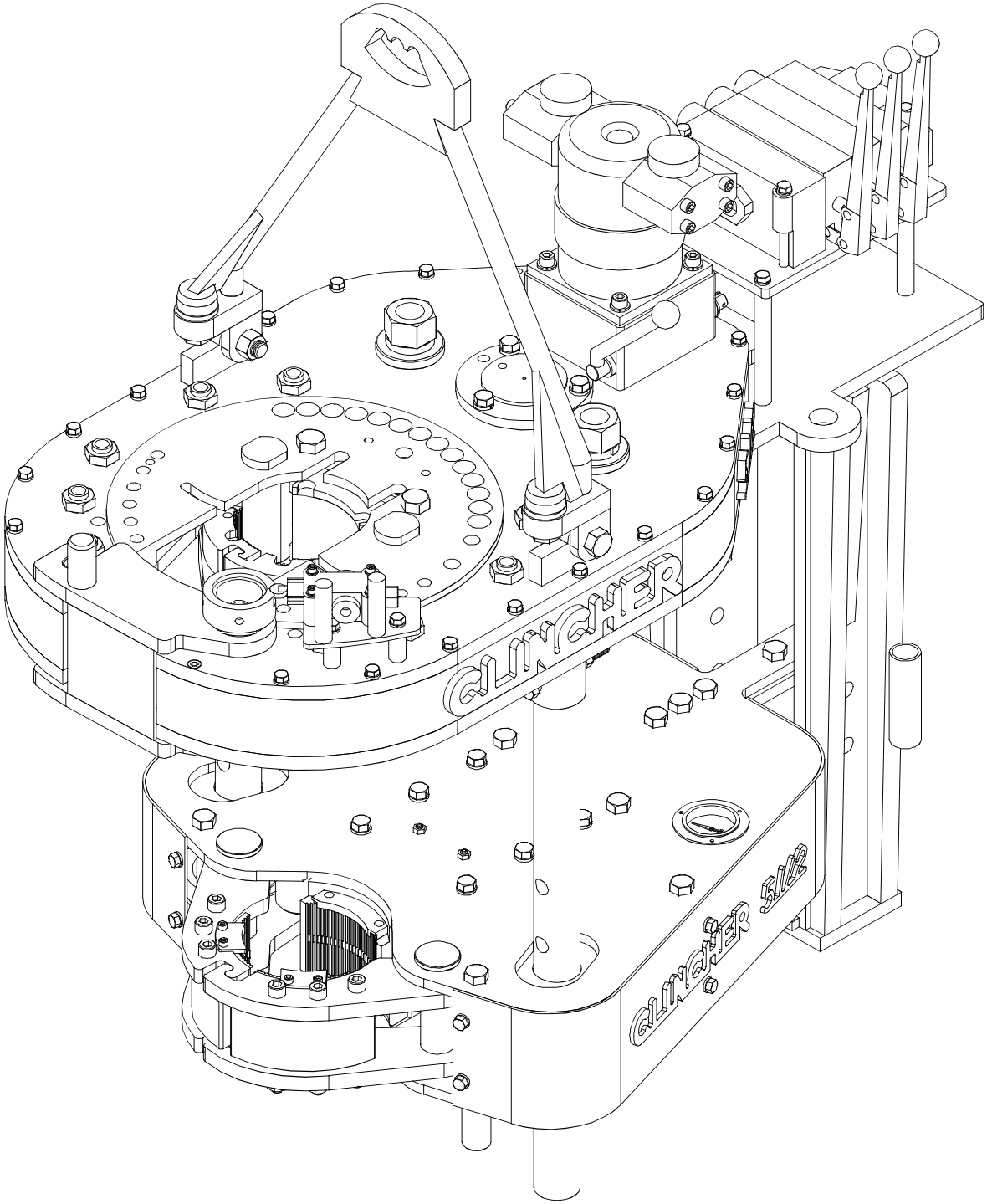
CYLINDER SAFETY:

Check clevis clearances before, during and after extending the cylinder and before using the cylinder under pressure to avoid possible injury, or bent or broken rods caused by binding. Never operate a cylinder above recommended pressures. Never use a cylinder as a safety device when transporting equipment.

PINHOLE LEAKS:

If you observe a pinhole leak, discontinue use of the component. If oil has penetrated your skin or contacted your eye, seek medical attention immediately!

SUPERIOR
Manufacturing & Hydraulics



5 1/2" LOCKJAW™ TONG & BACKUP

4225 Highway 90, East
Broussard, Louisiana 70518
Phone: (337) 837-8847
Fax: (337) 837-8839
www.superior-manf.com

SPECIFICATIONS

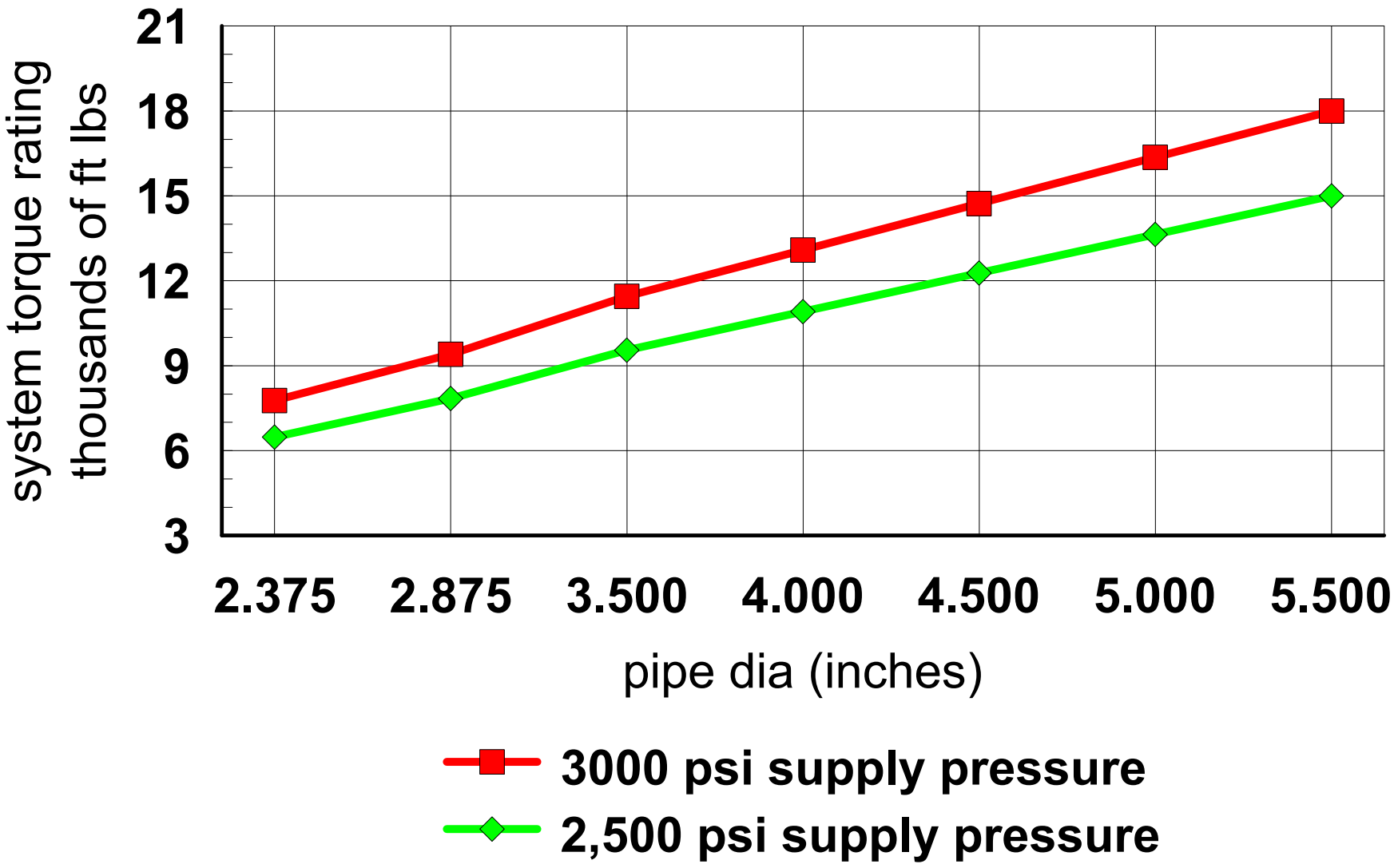
Maximum Torque	18,000 ft.lbs./24,405 Nm
Maximum Operation Pressure	3,000 psi/207 MPa
RPM @ 35 GPM/133 LPM: Manual Gearbox	
Max. Allowable Flow Rate: 40 GPM/151 LPM (Using Std. A-20 Valve Package)	
Max. Allowable Flow Rate: 60 GPM/227 LPM (Using Optional A-35 Valve Package)	
High	58
Low	12
Handle Length Tong	24 1/2"/ 62.2 cm
Handle Length Backup	29" / 73.7 cm
Overall Length	51.2" /130.1 cm
Overall Width	25.6" / 65.0 cm
Overall Height w/ Backup & Lifting Bracket	63 1/2"
Overall Height w/ Backup	51.2" /130.1 cm
Weight w/ Backup, Legs, & Hanger (approximate)	1,896 lbs./860 kg
Jaw Capacity	2 1/16" thru 5 1/2"
Distance Between Tong & Backup	
Low Backup Position	18"
High Backup Position	9 1/4"

Operates using Steel Tooth Wrap Around Dies, **GRIT FACE™** Wrap Around Dies and Aluminum Wrap Around Dies

Standard Equipment:
- Door Interlock
- Self Adjusting Brake
- Handles Tong

Optional Equipment:
- Two Speed Hydraulic Motor
- Hydraulic Cage Plate Brake System
- Handles Backup
- 3 Point Lifting Bridle
- Electronic Solenoid Dump Valve
- Hydraulic Intensifier for Backup
- Shipping Stand, or Skid
- Varying Outlets for Torque Turns Computer Sending Units

CLINCHER® CLJ5500 LOCKJAW™ Tong and BUCS5500 LOCKJAW™ Backup performance when dressed with fine tooth wrap-around steel dies



DESCRIPTION and APPLICATION

The **CLINCHER® LOCKJAW™** Tong and Backup system is an "open-throat" design which can handle tubulars as small as 2 1/16 inches to as large as 5 1/2 inches in diameter. This system features three (3) jaws in the tong and three (3) jaws in the backup which encircle the pipe. Wrap around jaws and dies, combined with our low friction jaw technology, constant radial load cam system and compensating jaw design provide exceptional gripping capabilities with reduced pipe deformation, stress and marking. Using our non-marking aluminum die system or **GRIT FACE™** dies in the **LOCKJAW™** Tong and Backup will now allow stainless steel corrosion resistant alloys (CRA) to be run as quickly and easily as a traditional tong runs conventional steel tubulars.

The **CLINCHER® LOCKJAW™** Tong and Backup system can do the work traditionally requiring up to three different sets of tools to run CRA or Fiberglass tubulars, as well as carbon steel casing tubing.

Notable Features and Benefits

LOCKJAW™ System	adds a third jaw and die to increase tong die coverage while providing means to prevent the ring gear from spreading at high torques
Low Friction Jaws	increases cam angle efficiency to allow use of aluminum dies
Splined Die System	aligns the die with the tubular and more evenly distributes radial load, essentially wrapping the die around the tube reduces pipe stress, deformation and minimizes marking
Compensating Jaw	provides a means of limiting the amount of radial load applied to the tube to minimize pipe stress and deformation
Constant Cam Angle	insures an adequate radial load is available regardless of relative rotation to enhance performance on undersized pipe
Die Retention Method	provides an enhanced method of preventing equipment damage and die loss if the pipe is inadvertently moved while the tong or backup are still gripping the pipe
Self Adjusting Brake	eliminates need to manually adjust brake bands to compensate for normal wear

In addition to these unique features listed above, the **CLINCHER® LOCKJAW™** Tong and Backup System is also equipped with numerous standard features including:

Door Interlock	prevents tong ring gear rotation whenever the tong door is open but allows control and operation of backup and lift cylinder at all times
Encoder Adapter	accepts customer's turns encoder to signal to a torque/turn computer

DESCRIPTION and APPLICATION

TONG OPERATION

The **CLINCHER® LOCKJAW™** Tong has an "open-throat" design with three jaws that encircle the pipe. These jaws are operated by cam surfaces machined in the ring gear. They are positioned within the ring gear by the top and bottom cage plate assembly.

The cage plate assembly and jaws are rotationally restrained by the cage plate brake system. Relative rotation between the ring gear and the cage plate assembly forces the front jaws to lock or unlock and the rear jaw to advance or retract.

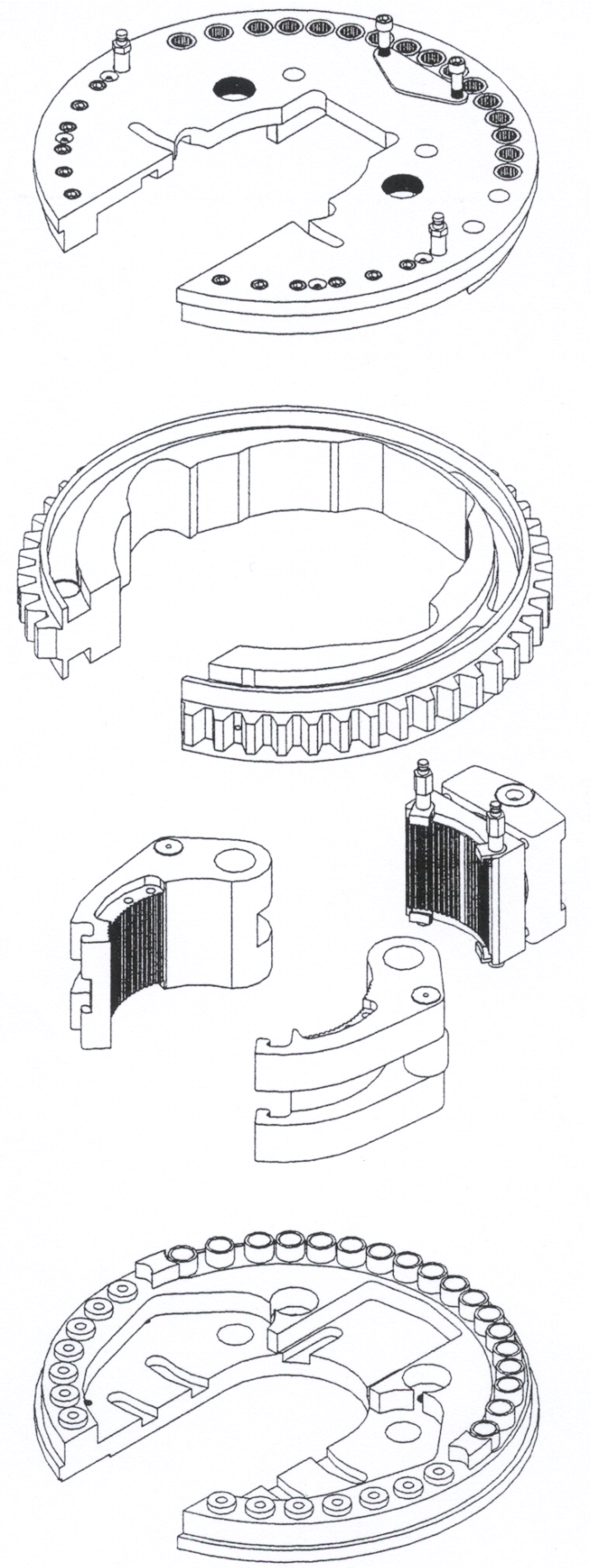
During a jaw closing cycle, the front jaws swing into interlock and then the rear jaw advances until the rear die contacts the pipe and forces it against the front dies. As torque increases, the ring gear continues to rotate relative to the jaws compressing the spring in the rear jaw until the ring gear stop pin contacts the shoulder on the cage plates. This system provides a means of limiting radial loads acting on the pipe. The interlocked front jaws and cage plate assembly limit the spreading load acting on the ring gear and dumbbell rollers to eliminate a frequent cause of failures in traditional tong designs.

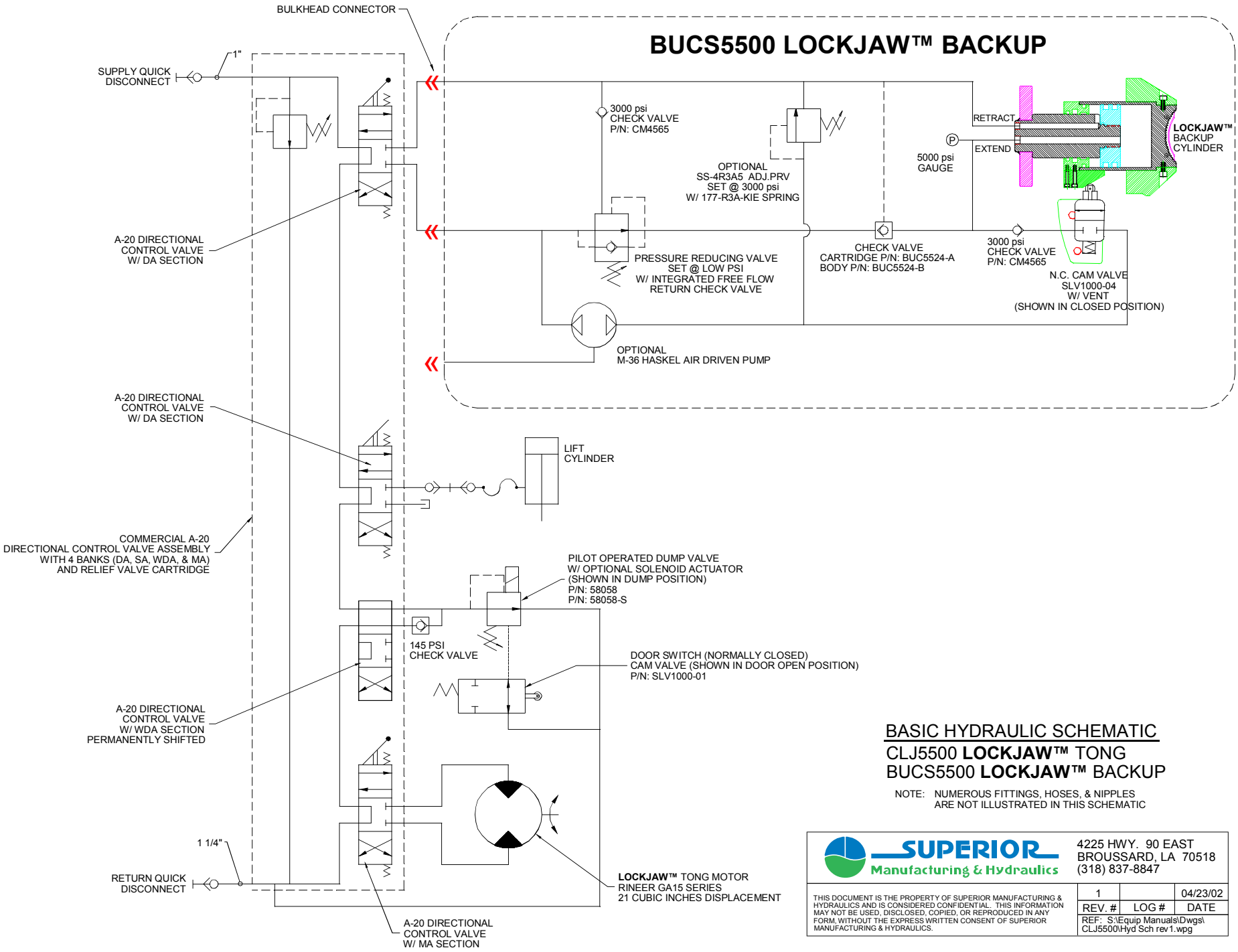
After completing the makeup or breakout cycle the jaws are opened by reversing the tong motor to drive the ring gear and cam surfaces in the opposite direction until the reversing pin contacts the ring gear shoulder. Springs are used to return the jaws to their fully open position.

The **LOCKJAW™** Tong's cage plate braking system is self adjusting to compensate for brake band wear. Field adjustments are not required under normal conditions. Should the band be worn to such an extent the self adjusting feature is not capable of compensating, the 5/8"-11 x 1 1/4" nylon set screw P/N 58063 shown in Figure 4 may be tightened to allow operations to continue until the brake band can be serviced.

BACKUP OPERATION

The **CLINCHER® LOCKJAW™** Backup has an "open throat" design with three jaws that encircle the pipe. The front jaws are operated by cam surfaces on the rear jaw cylinder. During a jaw closing cycle, the front jaws swing in and interlock as the rear die approaches the pipe. Once locked on the pipe, pressure is locked in the backup cylinder by a load holding valve. When opening the backup jaws, the cylinder operation is reversed to retract the rear die and unlock the jaws. Springs move the front jaws to their fully open position.




BUCS5500 LOCKJAW™ BACKUP
BULKHEAD CONNECTOR
SUPPLY QUICK DISCONNECT
1"
A-20 DIRECTIONAL CONTROL VALVE W/ DA SECTION
3000 psi CHECK VALVE P/N: CM4565
OPTIONAL SS-4R3A5 ADJ.PRV SET @ 3000 psi W/ 177-R3A-KIE SPRING
RETRACT
EXTEND
5000 psi GAUGE
LOCKJAW™ BACKUP CYLINDER
PRESSURE REDUCING VALVE SET @ LOW PSI W/ INTEGRATED FREE FLOW RETURN CHECK VALVE
CHECK VALVE CARTRIDGE P/N: BUC5524-A BODY P/N: BUC5524-B
3000 psi CHECK VALVE P/N: CM4565
N.C. CAM VALVE SLV1000-04 W/ VENT (SHOWN IN CLOSED POSITION)
OPTIONAL M-36 HASKEL AIR DRIVEN PUMP
A-20 DIRECTIONAL CONTROL VALVE W/ DA SECTION
LIFT CYLINDER
COMMERCIAL A-20 DIRECTIONAL CONTROL VALVE ASSEMBLY WITH 4 BANKS (DA, SA, WDA, & MA) AND RELIEF VALVE CARTRIDGE
PILOT OPERATED DUMP VALVE W/ OPTIONAL SOLENOID ACTUATOR (SHOWN IN DUMP POSITION) P/N: 58058 P/N: 58058-S
145 PSI CHECK VALVE
DOOR SWITCH (NORMALLY CLOSED) CAM VALVE (SHOWN IN DOOR OPEN POSITION) P/N: SLV1000-01
A-20 DIRECTIONAL CONTROL VALVE W/ WDA SECTION PERMANENTLY SHIFTED
1 1/4"
RETURN QUICK DISCONNECT
LOCKJAW™ TONG MOTOR RINEER GA15 SERIES 21 CUBIC INCHES DISPLACEMENT
A-20 DIRECTIONAL CONTROL VALVE W/ MA SECTION

BASIC HYDRAULIC SCHEMATIC

CLJ5500 **LOCKJAW™** TONG
BUCS5500 **LOCKJAW™** BACKUP

NOTE: NUMEROUS FITTINGS, HOSES, & NIPPLES ARE NOT ILLUSTRATED IN THIS SCHEMATIC

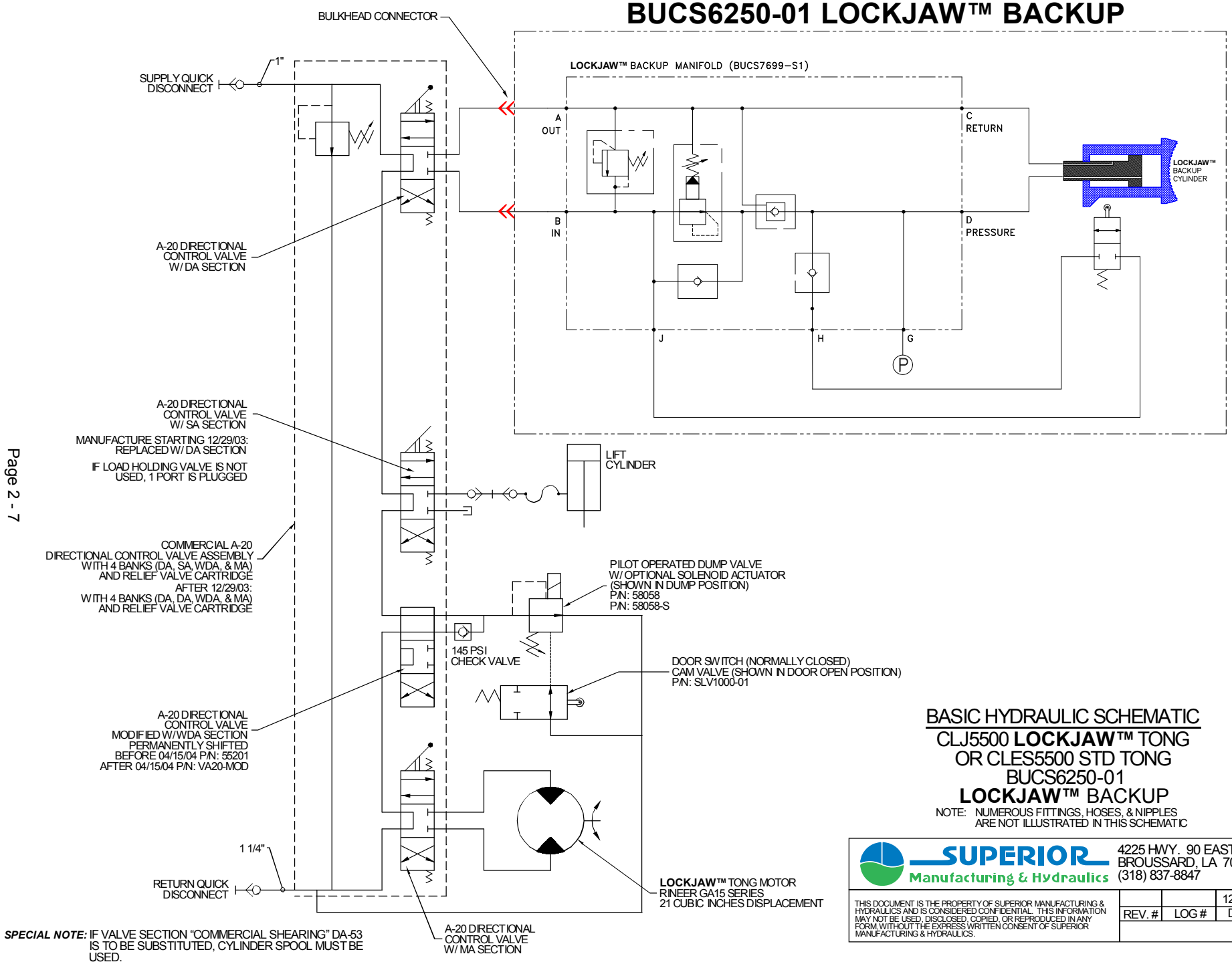
SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1		04/23/02

REF: S:\Equip Manuals\Dwgs\CLJ5500\Hyd Sch rev1.wpg

BUCS6250-01 LOCKJAW™ BACKUP



SPECIAL NOTE: IF VALVE SECTION "COMMERCIAL SHEARING" DA-53 IS TO BE SUBSTITUTED, CYLINDER SPOOL MUST BE USED.

BASIC HYDRAULIC SCHEMATIC

CLJ5500 **LOCKJAW™** TONG
OR CLES5500 STD TONG
BUCS6250-01
LOCKJAW™ BACKUP

NOTE: NUMEROUS FITTINGS, HOSES, & NIPPLES ARE NOT ILLUSTRATED IN THIS SCHEMATIC

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

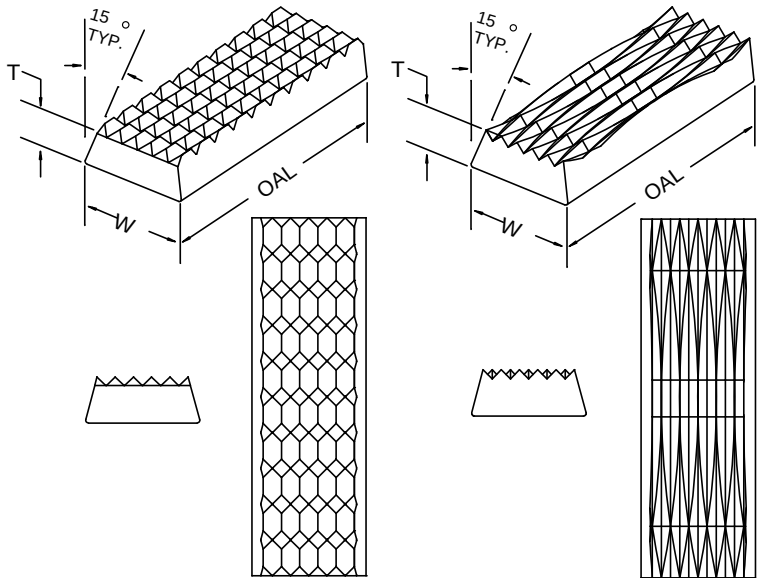
THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	12/18/09 DATE

CLINCHER® DIES

Many **CLINCHER®** Tongs and Backups utilize jaws and/or adapters which accept Dovetail Inserts (AKA Pencil Dies or Strip Dies) to effectively grip tubulars. Jaw systems and jaw adapters are also available which accommodate Wrap-Around Fine Tooth Steel Dies, **GRIT FACE™** Dies and Aluminum Dies.

The appropriate jaws, die adapters and dies required for a specific tubular OD are also described in this section of the manual.



STRAIGHT TOOTH **DIAMOND TOOTH**

Note: Diamond Tooth Dies are used when a more aggressive bite is required.

Thickness	Width	OAL	P/N Straight Tooth	P/N Diamond Tooth
5/16	5/8	3 1/2	*	*
5/16	5/8	3 7/8	DTI4052	*
5/16	5/8	4 1/2	DTI4002	*
3/8	5/8	3 1/2	DTI4030	*
3/8	5/8	3 7/8	DTI4051	*
3/8	5/8	4 1/2	DTI4001	*

Thickness	Width	OAL	P/N Straight Tooth	P/N Diamond Tooth
17/32	5/8	3 1/2	DTI4031	*
17/32	5/8	3 7/8	DTI4053	*
17/32	5/8	4 1/2	DTI4003	*
5/8	5/8	3 1/2	DTI4032	*
5/8	5/8	3 7/8	DTI4054	*
5/8	5/8	4 1/2	DTI4004	*
11/16	5/8	3 7/8	DTI4055	*
11/16	5/8	4 1/2	DTI4005	*
3/8	1	3 7/8	DTI1505	*
3/8	1 1/4	3 7/8	DTI1614	*
3/8	1 1/4	5	DTI1610	*
7/16	1 1/4	3 7/8	DTI1612	DTI1612D
7/16	1 1/4	5	DTI1617	DTI1617D
1/2	1 1/4	3 7/8	DTI1601	DTI1601D
1/2	1 1/4	5	DTI1602	DTI1602D
9/16	1 1/4	3 7/8	DTI1622	DTI1622D
9/16	1 1/4	5	DTI1623	DTI1623D
5/8	1 1/4	3 7/8	DTI1632	DTI1632D
5/8	1 1/4	5	DTI1633	*
11/16	1 1/4	3 7/8	DTI1642	*
11/16	1 1/4	5	DTI1646	*
3/4	1 1/4	3 7/8	DTI1651	*
3/4	1 1/4	5	DTI1693	*
3/4	1 1/4	5 7/8	DTI1662	DTI1662D
13/16	1 1/4	3 7/8	DTI1661	*
13/16	1 1/4	5	DTI1664	*
7/8	1 1/4	3 7/8	DTI1671	*
7/8	1 1/4	5	DTI1673	*
1	1 1/4	3 7/8	DTI1691	*
1	1 1/4	5	DTI1697	*

* Available upon request.

CLINCHER® WRAP AROUND DIES

CLINCHER® Wrap Around Dies are available in three types:

Fine Toothed Steel Dies:	for low to ultra high torque applications on carbon steel tubulars including tubing, casing, and drill pipe
Smooth Faced Aluminum Dies:	for low to moderate torque applications on fiberglass and corrosion resistant alloy (stainless steel) tubulars
GRIT FACE™ Dies:	for low to high torque applications on fiberglass and corrosion resistant alloy (stainless steel) tubulars where the use of steel dies is prohibited as well as on carbon steel tubulars where reduced marking is desired

The CLJ 5500 **LOCKJAW™** Tong and BUCS 5500 **LOCKJAW™** Backup provide up to nearly 300 degrees of coverage to maximize torque while minimizing marking and virtually eliminating the possibility of deforming the pipe. Each tool uses three (3) dies, one (1) rear die and two (2) front dies. The dies are designed to insure rear and front dies can only be installed in the correct jaw. The dies are interchangeable between the **LOCKJAW™** Tong and **LOCKJAW™** Backup. The tong's rear die is mounted on the rear jaw assembly which contains a disk spring package. This spring limits the amount of load which can be applied to the tubular by the die. Contact SUPERIOR for more information concerning special springs which may be used with low collapse rated tubulars such as fiberglass.

CLINCHER® Dies are designed to match the OD of the tubing, casing, coupling, or accessory being made up or broken out. Each die is stamped on the top or side to identify its size. Using Fine Toothed Steel Dies which are slightly larger than the tubular is acceptable provided the difference in diameters is less than 3/32" (0.093"). Aluminum and **GRIT FACE™** Dies should be matched with the specific tubular diameters required. **Note:** The use of improperly sized dies can result in reduced torque capacity, increased pipe marking, and reduced die life.

CAUTION: Do not attempt to grip tubular diameters which are larger than the dies being used. Failure to observe this precaution can result in damage to the tubular or tong jaws.

In emergencies where correct die sizes are unavailable, some operators have successfully used two different sizes of dies to accommodate unusual, nonstandard diameters. In such cases, the front jaws must be dressed with two dies of the exact same size. The "odd" sized die must be installed in the rear jaw. Some operators also report successful use of 2 Aluminum front dies with a Steel Toothed or **GRIT FACE™** die in the rear jaw.

CLINCHER® Wrap Around Dies are manufactured in specific diameters to match standard tubing and casing diameters, API coupling diameters, selected work string connection diameters and certain commonly used premium connection coupling diameters. **CLINCHER®** Wrap Around Dies should not be used on tubulars which are larger than the nominal die size. Steel Toothed Dies can be used on tubulars which are no smaller than 3/32" (0.093") less than the nominal die size. Aluminum and **GRIT FACE™** Dies should be matched with the specific tubular diameters required.

Note: Fine Toothed Steel Dies are normally stocked in our Broussard, Louisiana facility. A partial listing of commonly manufactured sizes is shown below. Aluminum and **GRIT FACE™** Dies are normally made to order although a limited range of sizes and small quantities may be available from stock. Contact SUPERIOR Manufacturing & Hydraulics for information concerning availability of stock and special die sizes.

CLINCHER® WRAP AROUND DIES

DIE Nomenclature for CLJ 5500 LOCKJAW™ Tong and BUCS 5500 LOCKJAW™ Backup

CLJ 5500-xxxx fine toothed steel dies for front jaws (2 reqd per tong plus 2 per backup)
CLJ 5501-xxxx fine toothed steel dies for rear jaw (1 reqd per tong plus 1 per backup)

CLJA 5500-xxxx aluminum dies for front jaws (2 reqd per tong plus 2 per backup)
CLJA 5501-xxxx aluminum dies for rear jaw (1 reqd per tong plus 1 per backup)

BB 5600-xxxx **GRIT FACE™** dies for front jaws (2 reqd per tong plus 2 per backup)
BB 5601-xxxx **GRIT FACE™** dies for rear jaw (1 reqd per tong plus 1 per backup)

ORDERING EXAMPLE: fine toothed steel dies are needed to run 2 7/8" OD tubing
Qty. four (4) CLJ 5500-2875 dies for front jaw
Qty. two (2) CLJ 5501-2875 dies for rear jaw
(replace xxxx with size required in inches)

CLJ 5500-xxxx, CLJ 5501-xxxx: Fine Toothed steel dies for **LOCKJAW™** Tong and Backup
2.062 2.125 2.375 2.400 2.600 2.723 2.750 2.875 2.900 3.000 3.125 3.250 3.297
3.375 3.500 3.625 3.688 3.750 3.875 3.900 4.000 4.053 4.125 4.250 4.500 4.625
4.750 4.875 5.000 5.500

CLJA 5500-xxxx, CLJA 5501-xxxx: Aluminum dies for **LOCKJAW™** Tong and Backup
2.375 2.875 3.500

BB 5600-xxxx, BB 5601-xxxx: **GRIT FACE™** dies for **LOCKJAW™** Tong and Backup
2.375 2.723 2.875 3.230 3.297 3.320 3.500 3.875 4.000 4.053 4.500 5.500

Contact SUPERIOR Manufacturing & Hydraulics for information concerning availability of stock and special die sizes.

ASSEMBLY INSTRUCTIONS

Fastener Lubrication and Make Up Torque Requirements

Most bolts, nuts and other threaded components are to be lubricated with Never-Seez or equivalent before assembly. Certain fasteners are to be assembled using permanent or removable Loctite as indicated in the assembly instructions and drawings. All tapered pipe threads are to be treated with a Teflon based pipe dope to assist in makeup and prevent leakage.

CAUTION: Do not use Teflon tape. Improper application of Teflon tape can cause joint failures. Teflon tape can release large particles which can plug small passages in hydraulic equipment.

All standard fasteners used in **CLINCHER®** products are to be GRADE 8 or better. DO NOT SUBSTITUTE lessor grades of fasteners. All fasteners are to be made up to the torque charted below. Failure to properly assemble these fasteners can result in their loss, product malfunction and ultimately result in situations where personnel can be exposed to dangerous situations.

LOCKJAW™ TONG and BACKUP FASTENERS		
Size	***Application***	***Torque***
1/4 - 20 NC	Door switch mounting bolts, backup clip bolts	14 ft lbs
5/16 - 18 NC	rear jaw shoulder bolts	16 ft lbs
3/8 - 16 Set Screws	bearing caps, door switch adj. sleeve	* [1]
3/8 - 16 NC	tong plates, brake bands, brake guards, clip bolts	38 ft lbs
3/8 - 16 NC	SHCS for front followers (use Loctite 252/Blue)	50 ft lbs
1/2- 13 NC	motor mounts, bearing caps, backup jaw bolts	93 ft lbs
5/8 - 11 NC	adjustable brake stop	none 1/8" gap
5/8 - 18 NF	cam follower allen head nuts	175 ft lbs
3/4 - 10 NC	hanger bolts, cage plate space bolts	317 ft lbs
7/8 - 14 NC	dumbell roller	* [2]
1 1/4 - 12 NF	idler shaft	850 ft lbs

[*1] Bearing Caps: Coat with removable Loctite, tighten until screw contacts bearing, back off 1 turn. Door Switch Adj. Sleeve: Coat with removable Loctite, tighten by hand until snug.

[*2] Tighten until all slack is removed, but dumbell roller is still free to rotate by hand.

LUBRICATION STANDARDS

Bearings and gears must be lubricated to minimize friction, cool, exclude foreign matter and prevent corrosion. **CLINCHER®** recommends using Texaco Marfak MP 2 or equivalent for all grease zerts, roller bearings and bushings. Gears located within the clutch housing or between the tong plates are to be heavily lubricated using PLUSCO 855 or equivalent.

ASSEMBLY INSTRUCTIONS

TONG ASSEMBLY

This section pertains to the physical assembly of the **CLINCHER® LOCKJAW™** CLE4500 Tong. We illustrate the individual sub assemblies in Section 9. The purpose of this section is to guide the technician in the order of assembly as we would accomplish on the manufacturing process at our plant. Use this section as a guide to help you familiarize yourself with the component parts of the CLJ5500. We have included references to drawings on the following pages to aid in the assembly. The drawings are laid out in the order in which you would assemble the unit.

Order of Assembly:

1-1 Locate suitable working height. Approximately 6" above your waist. Tong assembly stands are available from Superior Manufacturing & Hydraulic, Inc. which are custom made for tong service.

1-2 Install bottom tong plate PN 58009, on assembly stand.

1-3 Bolt CLJ5500 tong mid body PN 51047 to bottom tong plate PN 58009 with (14) 3/8 x 1 1/2 HHCS bolt PN 1049, and (15) 3/8 lockwashers PN 101, the seven rear bolts are counter sunk to accept 3/8" x 1" SHCS bolts.

1-4 [Fig. 8] Idler Gear Assembly: 2 Per Assembly

a) Press bearing PN 1907 into Idler gear PN 51095.
b) Retain bearing in place using Snap Rings PN 1937.
c) Press Idler Shaft PN 45096 into bearing.
d) Install Idler Spacer PN 45097 on lower side of Idler Gear, bottom side of spacer should be flush with step on Idler Shaft.
e) Install Idler Gears PN 51095. Assembly into bottom tong plate PN 58009. (See Gear Train Assembly Illustration in Manual.)

1-5 [Fig. 7] Motor Gear Assembly

a) Press bearing PN 1907 into high shifting gear bearing housing PN 51038.
b) Install high shifting gear bearing housing into bottom tong plate PN 58019.
c) Install bearing cap PN 51039 under high shift gear bearing housing using (3) 1/2"x 1 1/2" HHCS PN 111, and 1-2 lockwashers PN 1103.
d) Press brass bushing PN 4507-S1 into high shift gear PN45101.
e) Install high shift hear PN 45101 into high gear bearing housing PN 51038.
f) Using a brass punch tap high shift gear PN 45101 into bearing housing PN 51038 till boss of gear is resting in bearing.
g) Remove bearing cap PN 51039.

ASSEMBLY INSTRUCTIONS

h) Install snap ring PN 1945 onto snap ring groove located on the high shift gear shaft.
I) Reinstall bearing cap PN 51039.

1-6 [Fig. 9] Pinion Gear Assembly

a) Press bearing PN 1907 into pinion bearing cap PN 51070.
b) Install bearing cap into bottom tong plate PN 58009 using (3) 1/2" x 1 1/4" HHCS and (3) 1/2 lockwashers PN 1103.
c) Line up inner dimension splines of high gear PN 45101 with inner dimension of bearing, the boss on high gear should face bearing PN 1907.
d) Line up outer dimension splines of pinion gear PN 45100 inner dimension splines of high gear PN 45101.
e) Using a brass punch tap pinion gear splines through high gear splines going into bearing PN 1907 until pinion gear is mated completely with high gear.
f) Splines of pinion gear should mesh with splines of Idler gears PN 51095.
g) Install low gear PN 51099 onto pinion gear with boss of low gear facing up.

1-7 [Fig. 12] Dumbell Roller Assembly: 10 each

a) Clean dumbell roller PN 45032 in cleaning solvent freeing roller of any debris.
b) Lubricate (3) door bushings PN 1955.
c) Insert door bushings PN 1955 into inner dimension of dumbell roller, one at a time. After installed make sure door bushings turn freely inside of roller.
d) Lubricate dumbell thrust washers PN 45057.
e) Insert dumbell thrust washers PN 45057.
f) Install 1/8 NPT zert PN 1001 into one end of dumbell roller shaft PN 45031.
g) Install 7/8-14 low profile nut PN 1178 onto side of shaft opposite grease zert.
h) Making sure top of nut is flush with end of the roller shaft, tack weld into place.

1-8 Having all dumbell roller assemblies together, place 4 dumbell rollers at rear hole locations in bottom tong plate and pin dumbell rollers into place with dumbell roller shafts. (See Gear Train Assembly Illustration.)

1-9 [Fig. 22] Ring Gear Assembly

a) Install ring gear locking pin PN 58036 into hole location.
b) Secure into place with grooved pin PN 58080.
c) Install ring gear PN 58057 into tong body making sure teeth in idler gears PN 51095 align with teeth in ring gear, leaving throat of bottom tong plate PN 58009 and throat of ring gear PN 50057 aligned.

ASSEMBLY INSTRUCTIONS

1-10 Install (8) dumbell roller assembly around ring gear PN 58057 making sure holes in dumbell roller assembly match up to holes in bottom tong plate PN 58009.

1-11 Remove dumbell roller shafts PN 45031 from (4) rear dumbell rollers PN 45032.

1-12 Insert door jam PN 51067-S1 into door jam hole location in bottom tong plate PN 58009.

1-13 Making sure tong gear train is clear of all debris, tools, shop rags, etc., grease all gears with Plusco 855 gear train grease.

1-14 Install top tong plate PN 58008 onto mid body PN 51047 using (21) 3/8-16 x 1 1/2 HHCS PN 1049 and 3/8 lockwasher PN 1027, the 2 forward holes on front of tong are counter sunk to accept 3/8 x 16 - 1" SHCS PN 1041 for door clearance.

1-15 Press bearing PN 1907 into pinion bearing cap PN 51070-04. Note: See Fig. 9, Pinion Gear Assembly.

1-16 Install pinion bearing cap PN 51070-04 into top tong plate PN 58008 over the pinion gear PN 45100.

1-17 Insert dumbell roller shafts PN 45031 through bottom tong plate PN 58009, through dumbell roller assembly and finally though top tong plate. After installing dumbell roller shafts through top tong plate PN 58008 fasten with 7/8"-14 Nylok nut PN 1177.

1-18 (See Fig. 8) Threads of the idler gear shafts will be sticking out of the top tong plate and bottom tong plate. Install idler pad PN 45018, 1 1/4 lockwasher PN 1216, 1 1/2-12 nut PN 1215, and then torque to proper specification. Install 1/8 NPT grease zerts PN 1001 to ports on top and bottom of idler gear shaft.

1-19 [Fig. 5] Top Cage Plate Assembly

a) Clean top cage plate PN 58012 freeing it from all debris.
b) Install cam followers PN 1964, (16) required in designated holes on top cage plate PN 58012.
c) Install front followers PN 58037, (14) required in designated holes of cage plate PN 58012.
d) Flip top cage plate PN 58012 to upright position.
e) Fasten cam followers PN 1964 using 5/8-18 Allen Nut PN 58076, (16) required, torque to proper specs.
f) Fasten front followers PN 58037 using 3/8-16 x 1 1/2 SHCS PN 1049, (14) required, use 3/8" lockwashers PN 1027.
g) Spring retainer post PN 58065, (2) required will retain the 2 rear front followers PN 58037.

h) Access cover PN 58032 will be fastened over rear hole in top cage plate PN 58012 using 3/8-16 x 1 1/2 SHCS Bolt PN 1049, 2 springs will be needed on these bolts.
i) Install 3/16" drive zerts PN 1004 in rear holes of cam followers PN 1964 and in designated holes in top cage plate PN 58012.

1-20 [Fig. 6] Bottom Cage Plate Assembly

a) Clean bottom cage plate PN 58012 freeing it of all debris.
b) Install cam followers PN 1969, (18) required, in designated holes of bottom cage plate PN 58012.
c) Install front followers PN 58037 (14) required in designated holes of bottom cage plate PN 58012.
d) Fasten cam followers PN 1964 using 5/8-18 Allen Nut PN 58076, (18) required and torque to proper specs.
e) Fasten front followers PN 58037 using 3/8-16 x 1 1/2" SHCS PN 1049, (14) required, use 3/8" lockwasher PN 1027.
f) Cam followers PN 1964 will come with small plugs, plug all holes on backsides of cam followers PN 1964.

1-21 [Fig. 3] Brake Band Assembly

a) Install brake hub PN 58049 to bottom cage plate PN 58012, use boss on bottom cage plate as a guide.
b) Fasten brake hub PN 58049 onto bottom cage plate PN 58012 using 3/8-16 x 1" SHCS PN 1041 (7) required, use 3/8 high collar lockwasher PN 209 (7).
c) Install brake band assembly PN 58050 onto brake hub PN 58049.

1-22 Lubricate top groove and bottom groove of ring gear slots. Install top cage plate assembly and bottom cage plate assembly on tong using cage plate spacer PN 58007 between the two cage plate assemblies and then fastening the two assemblies together with 3/4-16 x 6" HHCS PN 1088 and 3/4" lockwashers PN 117, using proper specs.

1-23 [Fig. 16] Clutch Box Assembly

a) Install 1/4 ball bearing PN 1906 and detent spring PN A20-A1327135 and (1) 3/8-16 x 1/4 set screw PN 1028 in drive gear PN 51072.
b) Install drive gear assembly into high shifting gear PN 45101 which is already in tong gear case.
c) Fit shifting yoke PN 45061 onto groove of drive gear assembly.
d) Slide shifting shaft PN 45060 through clutch housing PN 51067-S3 through shift yoke PN 45061 till it protrudes through opposite end of clutch housing PN 51067-S3.
e) Install shift shaft spacer PN 45068 and roll pin PN 1006 to protruding end of shifting shaft PN 45060.

f) Install ball PN 45087 onto shifting shaft PN 45087.

1-24 Install tong motor PN 58072 with motor shaft PN 52009 and motor spacer 45076 into clutch housing PN 51067-S3 with (4) 1/2"-13 x 1" bolts PN 168 and (4) 1/2" lockwashers PN 1103. (See Top Plate Assembly.)

1-25 [Fig. 19] Door Assembly

a) Press (2) bushing PN 51036 into tong door.
b) Install door with door bushings onto tong body assembly.
c) Slide door washer PN 41037 under top part of door assembly lining up the inner dimensions.
d) Weld 7/8-14 low profile nut PN 1178 onto door shaft PN 45054 end without counter bore.
e) Slide door washer PN 45025 and bottom door bushing PN 1955B onto door shaft PN 45054.
f) With all inner dimensions of door assembly and tong plate assemblies lined up, slide door shaft PN 45054 through bottom of door until it protrudes out the top.
g) Place top door bushings PN 1955-A into inner dimensions of door bushings PN 51036.
h) Place door washer PN 45025 onto door shaft PN 45054.
i) Fasten door to tong body using 7/8-14 Nylock nut PN 1177.
j) Door switch collar PN 41048 is to be welded onto door, then adjustment sleeve PN 76131 should slide onto door switch collar being held in place by (2) 3/8-16 x 1/2" set screws PN 1029.

1-26 [Fig. 1] Brake Arm Assembly (2 each) Spring Style

a) Press bushing PN 58048-S1 into brake arm PN 58048.
b) Install brake arm PN 45020 onto brake band roller shaft PN 58060.
c) Secure washer and brake arm into shaft using 1/8" x 1" Cotter Pin PN 1003.

1-27 [Fig. 18] Brake Arm Assembly (2 each) Cylinder Style

a) Press bushing PN 58048-S1 into brake arm PN 58066-A.
b) Install brake arm PN 58066-A onto brake band roller shaft PN 58060.
c) Install washer PN 45020 on top shaft.
d) Secure washer and brake arm onto shaft using 1/8" x 1" Cotter Pin PN 1003.

1-28 Install (2) brake arm assemblies onto tong body. (See Brake Assemblies in manual.)

1-29 [Fig. 2] Spring Brake Assembly (2 each) Spring Type

a) Weld eye bolt retainer bracket PN 5809-S5 onto leg collar PN 58009-S3 of tong.
b) Install brake adjustment clevis PN 58051 onto brake arm PN 58066-A,

use Clevis Pin PN 58052 and Cotter Pin PN 1003 to retain brake adjustment Clevis PN 58051.

c) Fasten eye bolt PN 58055 to eye bolt retainer brackets PN 58009-S5 using 3/8-16 Nylock Nuts PN 213 and 3/8 flat washer PN 1025.
d) Attach spring PN 58056 between eye bolt PN 58055 and brake adjustment clevis.
e) See spring brake assembly bottom view in manual to see finished product.

1-30 [Fig. 17] Cylinder Mount Assembly (2 each) Cylinder Type

a) Attach cylinder PN 72032 to cylinder mounting bracket PN 58061.
b) Install 1/8 NPT breather plug PN 1579-B.
c) Brake band roller shaft PN 58078 should be put in place of dumbell roller shaft as seen in optional cylinder brake assembly.
d) Attach cylinder mount assembly onto tong.
e) Use washer PN 45025 and 1/8 x 1" Cotter Pin PN 1003 to mount in rear onto brake band roller shaft PN 58078 and use a 1/4" Clevis Pin to mount in front onto brake arm assembly.
f) Plumb cylinder with a 1/8 street elbow and 1/8 hydraulic hose which can be purchased from Superior Manufacturing & Hydraulics.
g) See optional cylinder brake assembly bottom illustration in service manual to see finished product.

1-31 [Fig. 4] Brake Linkage Guard Assembly

a) Weld brake adjustment block PN 58009-S2 to tong body. (See brake assembly in service manual.)
b) Weld cover tab PN 58009-S4 to leg collar PN 58009-S3.
c) Install 1/2" x 1 1/4" Nylock Set Screw PN 58063 into 1/2" threaded hole on brake adjustment block PN 58009-S2, leave 1/4" sticking out on rear side of block.
d) Install brake linkage guard onto tong using (3) 3/8-16 x 1" HHCS PN 1047 and (3) 3/8" lockwashers PN 1027 to fasten.
e) There are (2) brake linkage guards PN 58074 and PN 58073 assemblies per tong.

1-32 [Fig. 10] Right Door Assembly

a) Press (4) bushings PN 58079 into right door PN 58001.
b) Install right tong door retainers PN 58020 to tong door using (4) 3/8-16 x 1" SHCS PN 1041, permanent Lok Tite should be applied to bottom retainer bolts.
c) 3/8-16 x 2" SHCS PN 1050 is to be installed into center hole of top retainer PN 58020.
d) Press Garlock Bushing PN 58059-S1 into door roller PN 58059.
e) Install door roller PN 58031 into right door PN 58001.

1-33 Install right door assembly into cage plate assembly using the door pivot pin PN

58006 to retain.

1-34 Install 1/8 NPT zert PN 1001 into door pivot pin PN 58006.

1-35 [Fig. 11] Left Door Assembly

a) Press (4) bushings PN 58079 into left door PN 58002.
b) Install left tong door retainers PN 58033 to tong door using (4) 3/8-16 x 1" SHCS PN 1041, permanent Lok Tite should be applied to bottom retainer bolts.
c) 3/8-16 x 2" SHCS PN 1050 is to be installed into center hole of top retainer PN 58020.
d) Press Garlock Bushing PN 58059-S1 into door roller PN 58059.
e) Install door roller PN 58059 and door roller pin PN 58031 into left door PN 58002.

1-36 Install left door assembly into cage plate assembly using the door pivot pin PN 58006 to retain.

1-37 Install 1/8 NPT zert PN 1001 into door pivot pin PN 58006.

1-38 [Fig. 14] Rear Jaw Assembly

a) Install bottom clips PN 58019 onto rear jaw housing PN 58015 using (2) 3/8-16 x 1" SHCS OB 1941, using permanent Lok Tite.
b) Install top clips PN 58019 onto rear jaw housing PN 58015 using (2) spring retainer posts PN 58065.
c) Load spring PN SPG5500-S2 with spring plates PN SPG5500-S1 attached into rear jaw housing PN 58015.
d) Install rear jaw plunger PN 58016 on top of spring pack.
e) Fasten rear jaw plunger PN 58016 to rear jaw housing PN 58015 using (4) 3/8" x 3/4" shoulder bolts PN 1057 and torque to proper specs.
f) Press (2) bushings PN 18DU12 into rear jaw rollers PN 58066.
g) Install jaw rollers PN 58066 into rear jaw plunger PN 58016 and slide rear jaw pin PN 58078 through the plunger and roller until head of pin is flush with the top of the plunger.
h) Install (1) 3/16" drive zert PN 1004 into head of jaw pin PN 58078.

1-39 Install rear jaw assembly into tong.

1-40 [Fig. 16] Hanger Bracket Assembly

a) Install hanger bracket assembly onto pad eyes located on top of tong.
b) Fasten with (2) 3/4"-10 x 3" HHCS bolts PN 1176 and (2) 3/4"-10 Nylock nuts PN 1167.

1-41 [Fig. 20] Door Switch Assembly

a) (2) Door switch base mounts PN 45067-S7 should be welded to tong body.

ASSEMBLY INSTRUCTIONS

b) Door switch base PN 76128 bolts onto door switch base mounts using (2) 3/8-16 x 1" HHCS bolts PN 1047 and (2) 3/8 lockwashers PN 1027.
c) (2) door switch bumpers PN 76128-S1 are welded to door switch base PN 76128.
d) Install door switch PN SLV1000-01 to door switch base PN 76128 using (4) 1/4-20 x 2 1/4" HHCS bolts PN 110 and (4) 1/4-20 Nylock nuts PN 212.

OPERATIONAL INSTRUCTIONS

SUSPENSION

A) Tong should be hung by minimum 7/8" O.D. wire rope. It should be hung as close to the center of the drill rotary without interfering with operation of drill string and lifting equipment. It is recommended the operator make use of the **CLINCHER®** Lift Cylinder. The **CLINCHER®** Lift Cylinder incorporates a hydraulic cylinder and manual lift spring. The hydraulic cylinder portion is used to assist in the raising and lowering of the tong and backup while the spring allows for movement during make-up and break-out.

WARNING: The suspension system must allow the tong to easily move down a distance equivalent to the thread make-up length. If significant resistance is encountered the suspension system may be subject to load which could cause its failure, damage equipment, or expose personnel to severe or fatal hazards.

B) Assure that tong is suspended in level manner. Both tong and the backup must be level at the point they contact the tubular. Using adjustment screws and slots in rigid hanger assembly, adjust tong so that it hangs level on horizontal axis and is parallel to tubular on vertical axis.

C) Make certain that floor space is adequate to maneuver tong on and off pipe. The space must be clear of obstructions to allow safe and unrestricted operation.

D) Attached 5/8" minimum wire rope as a tong back-up line at 90 degree angle to tong and at same level to insure proper readout of torque indicator. You should always have snubbing line attached. Use of a integral hydraulic backup is safer than manual backup, but operators should maintain additional safety of snubbing line to prevent injury in case of hydraulic failure or the failure of operator to have backup properly applied to tubular. This equipment generates extreme torque and should be used with caution.

Jaw and Die Installation

NOTE: Front and Rear Dies Are NOT Interchangeable.

A) Be sure all power to unit is off and power unit itself is shut down.

B) Determine O.D. of tubular to be made-up or broken-out. Use proper dies to bite O.D. of tubular and insert as follows: Remove jaw assembly from tong. Remove spring retainer post PN 58065 and upper die retainer clips. Insert rear die into rear jaw. Reinstall clips and spring retainer posts, attach springs.

1) Disconnect springs and remove rear jaw.

2) Disconnect front jaw springs and swing one front jaw into throat of tong. Remove clip retainer bolts and clip. Insert die into front jaw. Reinstall clip and retainers bolts, swing jaw back into pocket and reattached spring. Repeat for opposite side.

Hydraulic Lines

A) Be sure all power to unit is off and power unit itself is shut down.

B) Always inspect hoses prior to installation for abrasions, kinks, and other visible damage.

C) Install hydraulic supply hose and hydraulic return hose between tong and hydraulic power unit. Be advised that the standard installation on **CLINCHER®** tong calls for 1" Hydraulic Supply hose and 1-1/4" Hydraulic Return hose. The differing hoses eliminates the possibility attaching the wrong hose to the wrong outlet while at the same time reducing back pressure in your hydraulic system.

OPERATIONAL INSTRUCTIONS

Tong Operation

A) Insure proper dies are installed. Connect hydraulic hoses, verify reservoir is full of hydraulic fluid and insure suction valve is open.

B) Open bypass valve to hydraulic system, than check to make sure all hose connections are secure and hydraulic system is free of leaks.

C) Be certain door is completely closed before operation to insure safe operation. The **CLINCHER®** 5-1/2" **LOCKJAW™** is equipped with a door switch, which prevents operation of the tong when door is even paretically open.

D) Use power unit to start up procedure as outline your owners manual supplied by the manufacturer.

E) In the event hoses are not tightened securely, possible failures to hydraulic system can occur.

1) If pressure supply hoses is restricted or flow is blocked, pressure will increase in the hydraulic power unit, resulting in increased RPM in the power unit.

2) If return line hoses are restricted or flow is blocked, pressure will increase in the hydraulic power unit and the hydraulic system to the tong itself, resulting in the tong motor increasing to maximum pressure and possible motor seal failure.

F) After completion of A through E restart the power unit and allow engine to idle for approximately 10 minutes. Slowly close bypass valve to allow circulation of hydraulic oil through tong and hoses. Place shifting lever into low and rotate several times. Repeat in reverse. If correct jaw-die combination is installed, the unit is now ready to run pipe.

G) Adjust height of tong and backup to proper height, using the control valve located all the way to the right of rear valve bank assembly.

H) Stand in the normal operators position, insert the locking pin into the rear cage plate hole (on operators side). This pin allows ring gear to rotate clockwise (make-up) and engage the can to close jaws on pipe.

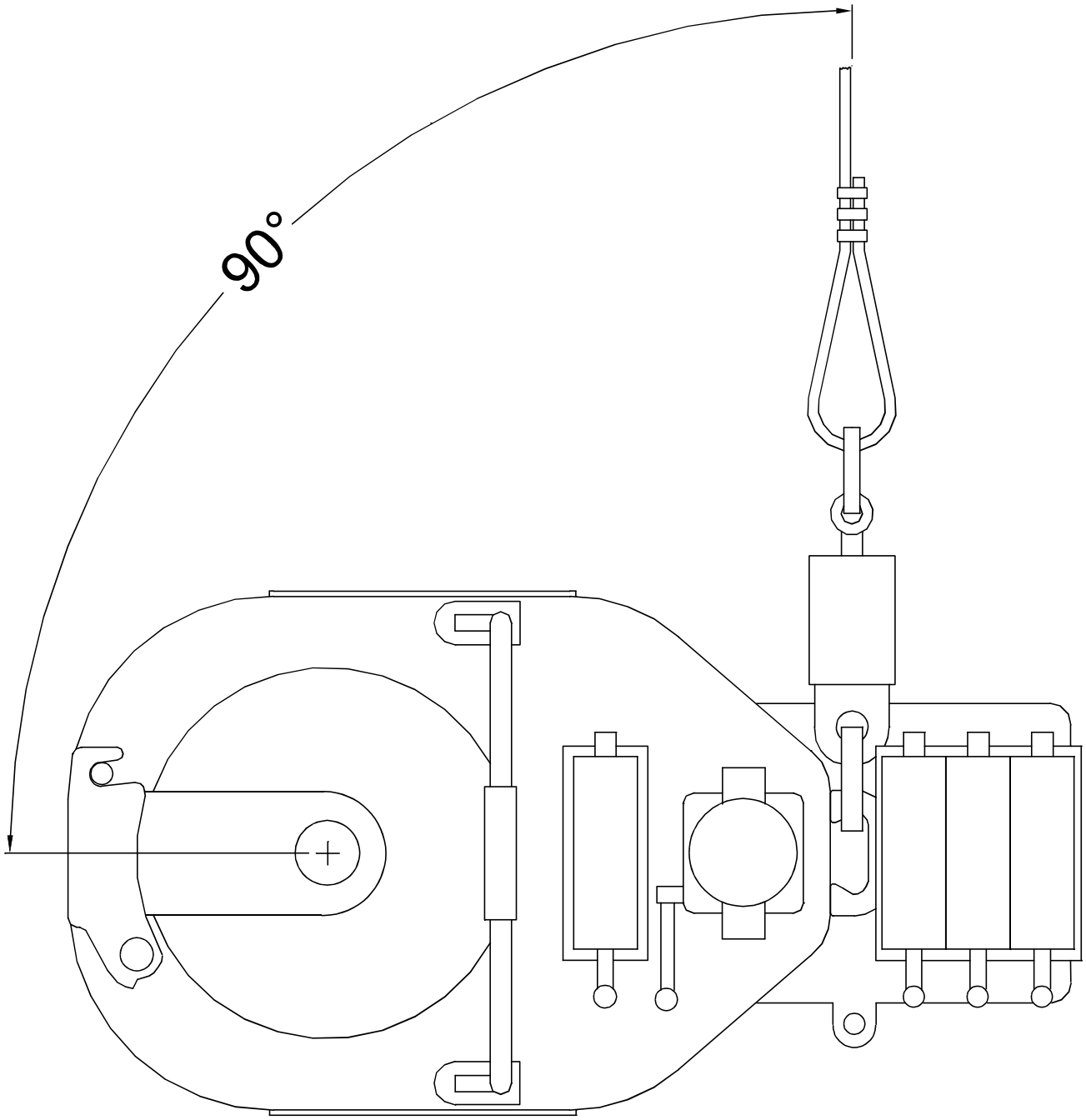
I) Swing tong and backup onto tubing, making sure to align tubing on rear jaw of backup. Close backup jaws by pushing middle control lever forward. The design of the **CLINCHER® LOCKJAW™** backup centers pipe in the backup and tong. Close tong door.

J) Rotate ring gear clockwise by pushing motor control lever on the front valve bank assembly forward till jaws lock and pipe and continue to rotate till desired amount or torque is applied.

K) After correct amount of torque specific to that connection has been applied, release tong jaws by pulling back on motor control lever till jaws release and throat in cage plate is aligned with door opening. Open door.

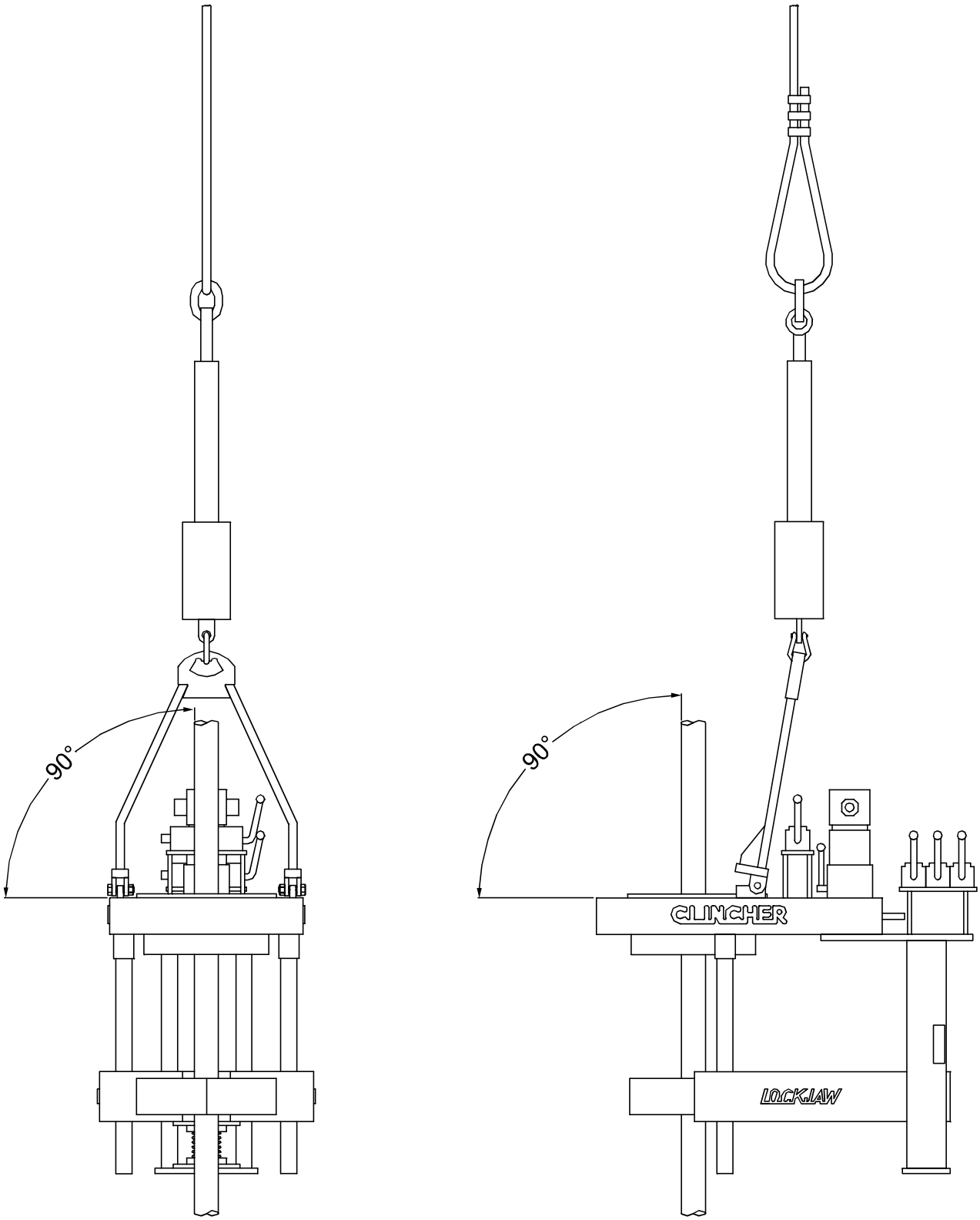
L) Release backup by pulling back on right control lever on rear valve bank assembly until backup jaws are completely retracted.

M) High and low gear is adjusted by use of shifting lever PN 45060, located to the left side of the shifting housing. With the lever in the upwards poition the tong is in high gear. With the shifting lever in the downward position, the tong is in low gear.



TYPICAL SNUB LINE INSTALLATION

NOTE: SNUB LINE IS PERPENDICULAR
TO AXIS OF TONG



TYPICAL TONG INSTALLATION

NOTE: TONG IS PERPENDICULAR
TO TUBING

MAINTENANCE INSTRUCTIONS

CLINCHER® recommends that owners of **CLINCHER®** Hydraulic Power Tongs, Backups, **CHROMEMASTER™**s and accessories adapt a regularly scheduled maintenance program. Implementation of this type of program offers several benefits. Firstly you increase the life of your equipment, secondly, you may find a problem before it escalates to a costly repair or down time on the job, and most importantly, prevent injury to operating personnel.

A major inspection (described at the end of this section) should be carried out if equipment is suspected to have been damaged during transit or is to be mobilized to a remote location where maintenance operations are difficult to carry out.

Routine Maintenance

Cleaning - Upon return from each and every job:

A) Pre-wash unit to remove majority of dirt and grease build up as to allow removal of dies, and inspection of overall condition of unit.

B) Remove and inspect dies from tong and backup. Note any missing or damaged die retainers, and or die retainer bolts.

C) Remove side jaws from tong and inspect side jaw for missing or broken parts, damaged splines, broken ears (locking hooks on front portion of side jaws.)

D) Clean and inspect side jaws, jaw pins, jaw rollers for damage or excessive wear. Lubricate pins, and rollers and reinstall in tong.
* Inspect jaw rollers insuring Teflon surfaces are in tact on garlock bushing, if not replace bushing.

E) Remove, clean (in non flammable solvent), and inspect back jaws in tong. Check jaw pins for breakage, cracks and uneven wear patterns. Inspect jaw rollers for cracks, breakage and flat spots.

F) Disassemble back jaw sections by removing spacer bolts (4) at back of jaw. Replace spring pack if signs of excess bulging, cracks, and any other deformation.

G) Reassemble jaw sections replacing any damaged parts. Lubricate jaw pins and rollers using gear grease. Set aside for testing. (Note: Upon reassembly assure that shoulder bolts are completely shouldered.)

H) Clean and inspect backup operating cylinder. Insure sline area is free from damage and any rust or dirt is removed. Replace any missing or damaged die retainer clips and die retainer bolts.

I) Inspect all hoses for wear, replace as necessary.

J) Inspect hanger assembly to assure all parts are returned and in operating condition. (*i.e.* H-Plates, spring, leg springs, leg spring caps and pins.)

MAINTENANCE INSTRUCTIONS

K) Replace jaw, pins and rollers in tong.

L) Lubricate tong's cam followers (upper and lower), dumbell roller shafts (upper and lower zerts), door shaft, center idler gear shaft, outboard idler gear shafts (2), pinion gear, and secondary gear assemblies (Pinion gear and secondary gear assemblies are installed with sealed bearings. There is no provisions to grease these bearings. However, if replaced by non-sealed bearings, the 1/8" N.P.T. flush plugs should be replaced with zerts PN 1001 and both gear assemblies should be added to the regular lubrication schedule.), low gear housing, and shift housing (2 zerts each), and re-pack tong body cavity. Lubricate zerts in backup plates and pins.

M) Install dies of a size needed for testing purposes, and attach hydraulic power unit to tong. Before energizing power unit make certain no one is working on tong or backup and all tools and parts are removed from the tong and backup.
* Remove clevis pins from clevis on brake hook. Remove any corrosion using a wire wheel, lubricate and reinstall.

N) Insert test mandrel of the exact same size as the die which are installed in the tong and backup. **Caution:** Testing the function of the backup without the proper size dies installed and/or without the proper sized mandrel in place, you risk serious damage to the backup cylinder.

O) After power unit has reached operating R.P.M. and temperature, operate the backup control valve and close backup around test mandrel using sufficient flow and pressure to clamp mandrel and maintain pressure to backup. (Recommended operating pressure of 2,500 P.S.I.) Backup pressure gauge should match system operating pressure. After release of control valve you may experience a slight drop in backup pressure (up to 300 PSI) this is normal. If backup pressure drops more than 300 PSI within 2 minutes, you may be experiencing a hydraulic leak.

P) While maintaining pressure on backup visually inspect hoses, stainless steel lines, fittings, etc., for seepage of hydraulic fluid. Repair, or replace parts causing leaks. If you see no visible external leaks and your backup is still losing pressure, there may be an internal leak in the operating cylinder or load holding valve allowing fluid to bypass the piston. It is recommended that the backup be returned to the manufacturer for repair.

Q) If at this time your backup functioning correctly, open and close unit several time to insure consistent operation.

R) With the proper dies installed in the tong, and backup and test mandrel locked in the backup, place reversing pin into the make-up position, set tong into low gear and operate tong through several cycles of locking, biting and torquing to required torque. Change reversing pin to break-out position and repeat. Repeat same procedure in high gear.
Note: Torque developed in high gear is considerably less than torque developed in low gear.

S) Test door interlock system by opening door slightly with tong rotating. (Remove test mandrel for this procedure.) The tongs rotation should stop. If tong rotation fails to stop close door, cease rotation, deactivate power unit and inspect door interlock switch for damage. Insure that adjustment collar is oriented to allow wheel of door switch to fit into recess on collar.

MAINTENANCE INSTRUCTIONS

Warning: If door switch system is not functioning properly tong must not be used.

T) Reinspect tong and backup hydraulic system for leaks.

U) If at this time the unit is functioning as intended, replace all covers and grease splines in tong and backup (side jaws and back jaws), tape or grease spools on control valves (to prevent paint from adhering to polished spool surface), prime and paint unit for storage.

MAINTENANCE INSTRUCTIONS

Recommended Lubrication Schedule Performed After Completion Of Each Job

Hydraulic Tong

a) Cam followers: upper and lower (all)
b) Dumbell roller shafts: upper and lower (all)
c) Door shaft
d) Center idler shaft
e) Outboard idler shaft (2)
f) Low gear housing (2 zerts)
g) Shift housing (2 zerts)
h) Re-pack tong cavity
i) Pinion and secondary gear shafts (if sealed bearings have been replaced by non-sealed bearings)
j) Jaw rollers and pins: Remove jaw pins and rollers, clean and lubricate with gear grease
k) Inspect hydraulic fluid for foreign material and contaminant. Filter or replace. Your must filter or replace entire system including power unit tank and lines along with tong to insure all contaminants are removed.

Annual Major Maintenance

Inspection and repair

Routine preventative maintenance will significantly extend the operating life of your equipment, reduce operating cost and avoid downtime. **CLINCHER®** recommends a program of frequent routine inspection and equipment is suspected to have been damaged during transit or is to be mobilized to a remote location where maintenance operations are difficult to carry out.

A) Visually inspect components on power tongs, which could possibly have been damaged either during operation or transit. *i.e.* damage to hanger assembly, hydraulic backup, mounting legs, or hydraulic valve assembly

B) Check test date. Ensure that a load test and inspection was carried out within the last 9 months.

C) Check ring gear. Check for any signs of damage or wear.

D) Remove motor and valve assembly from the tong body.

E) Check motor seal. Apply hydraulic power, run the motor and visually check the motor seal for any signs of leakage.

F) Check drive gear. High and low pinion gears. Check for excessive sign of wear on the motor gear.

G) Check condition of control valve spools. Activate valves and check for any sign of wear pitting or scoring of the chrome surface of the spools. If the spool is damaged in any way, the complete section must be changed out as spools are not interchangeable.

H) Check gear selector and shaft. Visually inspect the shifting shaft for alignment and straightness.

I) Check Hi/Low Gear assembly. Visually inspect high and low clutch and gears for any sign of ;chipped, broken, or worn teeth.

J) Check dumbell rollers, shafts and bushings. Check for excess movement on either bearings, bushings, shafts or dumbells.

K) Check idler gears and center pinion shaft gears and bearings. Check that there are no signs or worn, chipped or broken teeth on the idler and center pinion shaft gears.

MAINTENANCE INSTRUCTIONS

L) Check door bearings. Visually check excess movement on bearings at the door assembly. If excess movement is found the door must be removed making careful note of bearing washers positions for reassembly.

M) Check door switch system. Visually check that the door switch valve has sufficient strength to hold door in closed position. If this is not the case, then repairs are required.

N) Check door safety device. Functionally check the tong door safety switch. Engage low gear, open tong door and push rotor control lever forward as if to rotate rotor, if safety device is operational then the rotor will not rotate.

O) Check lifting hanger and test date. Check lifting hanger for damage. Ensure that a load test and inspection was carried out within the last 9 months.

P) Check condition of all hydraulic hose and fittings. Visually inspect all hydraulic hoses fitted to the tong and in the back-up for any signs of leaks, cuts or wear.

Q) Reinstall all parts which were removed for inspection and/or damage. Connect to hydraulic power supply and function test operation of tong in high, low, forward and reverse. Torque test utilizing appropriate dies and test mandrel, test operation of lift cylinder.

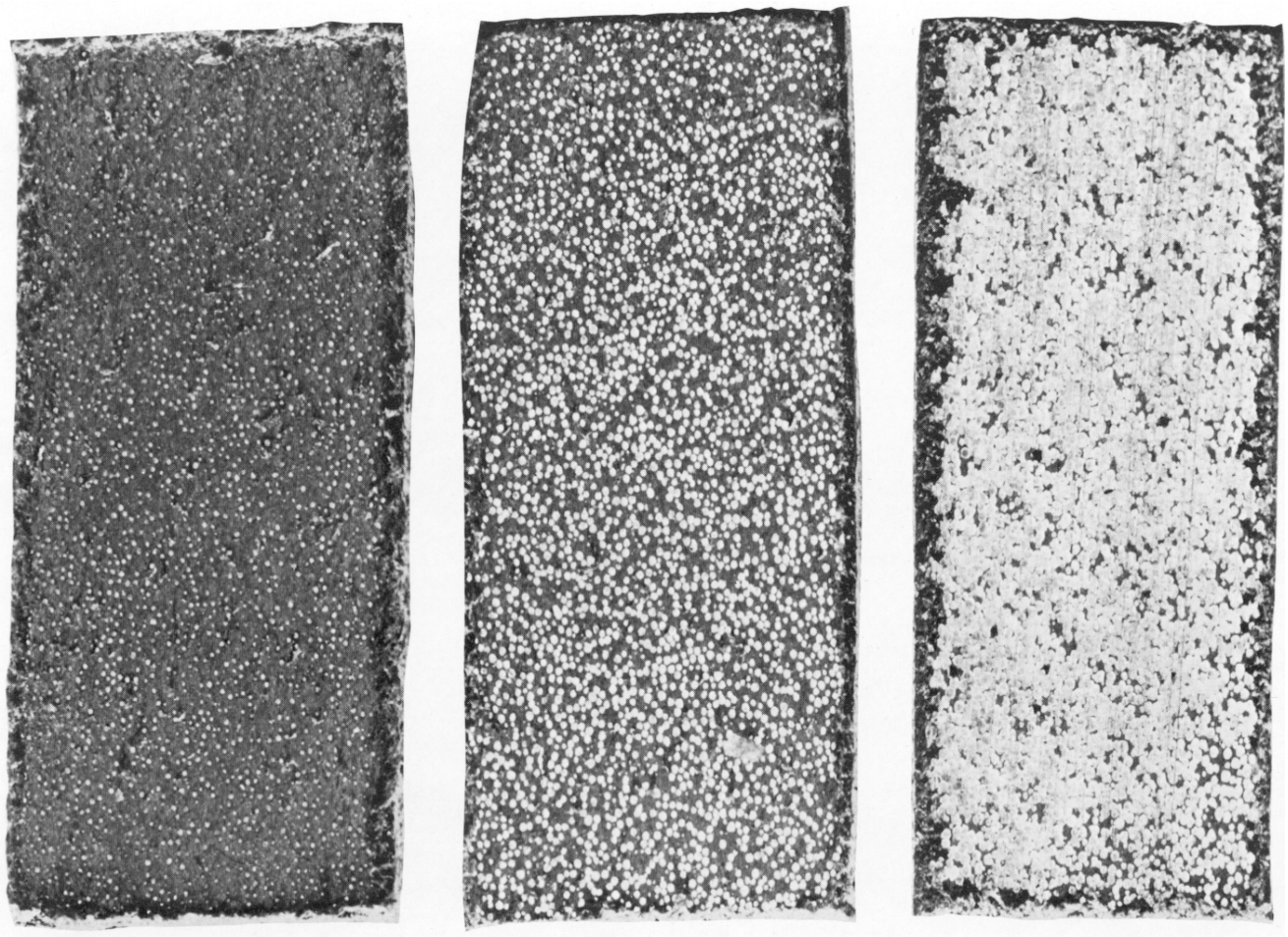
R) Inspect power unit system according to manufactures specifications.

S) Lubricate tong and backup according to maintenance schedule preceding this section.

T) Paint, remembering to mask off surfaces not intending to paint with grease or masking tape.

U) Complete dated inspection report giving details of all duties performed along with complete list of items replaced.

DU® BEARING DRY WEAR PROCESS



1. 2. 3.

1. Running-in completed. Low wear rate starts when up to 10% of the bronze is exposed.

2. Typical surface appearance when DU® bearing approaches its half life with 40% to 50% of the bronze exposed.

3. Bronze is beginning to smear near the end of DU's useful life as a dry bearing. Over 75% of the bronze is visible at the surface.

For additional information about DU bearings, please contact Garlock Bearings Inc,
700 Mid Atlantic Parkway, Thorofare, New Jersey 08086. **(609) 848-3200** FAX: (609) 848-5115

THIS PAGE LEFT BLANK INTENTIONALLY

TROUBLESHOOTING

HYDRAULIC TONG SYSTEM

	PROBLEM	SOLUTION
Hydraulic Pump Making Excessive Noise:		
A)	Restricted or clogged intake line	Clean line, check for contamination.
B)	Contaminated fluid	Flush system, change fluid.
C)	Restricted vent	Clean or replace air vent.
D)	Air in fluid	Check for leaks and be certain fluid suction in tank is well below hydraulic fluid in reservoir.
E)	Damaged or worn parts	Repair or replace damaged parts, check fluid for contamination.
F)	Excessive RPM	Check PTO, gears, and recommended speed to assure proper pump is installed for operation.
G)	Increased friction	Make sure pump has been assembled using correct torque valves.
H)	Damaged or worn relief valve.	Replace relief valve.
I)	Damaged or worn check valve.	Replace check valve.
J)	Restricted discharge	Check to make sure relief valve is set to proper pressure.
K)	Valve system restricted	Inspect and repair or replace defective parts, check system for contamination.
Excessive Wear to Hydraulic Components:		
A)	Fluid contamination	Flush fluid system, replace with new fluid.
B)	Components misaligned	Inspect and realign.
C)	High operating pressures	Gauge and set to proper pressure.
D)	Exhausted fluid (depletion of additives)	Flush fluid system, replace with new fluid.
E)	Air in fluid	Check for leaks, and be certain fluid suction in tank is well below hydraulic fluid in reservoir.

TROUBLESHOOTING

HYDRAULIC TONG SYSTEM

	PROBLEM	SOLUTION
Excessive Wear to Hydraulic Components:		
F)	Shortened bearing life	Check alignment, insure proper lubri-cation to non-sealed bearings.
Slow Tong Speed:		
A)	Restricted supply line	Clear supply line and check intake on reservoir.
B)	Low fluid level	Add fluid to proper volume.
C)	Air leak	Locate and repair leak.
D)	Pump speed insufficient	Assure proper pump speed for application.
E)	Damaged or worn equipment	Isolate pump and check pressure to determine whether motor or pump is defective. Repair or replace defective part.
F)	Pump not primed	Check fluid viscosity and restrictions of intake line. Replace fluid if inadequate for operating temperature.
G)	Low or no flow from supply line	Check to assure couplings are securely fastened.
H)	Hydraulic bypass valve malfunction	Inspect. Adjust unloading pressure. Replace or repair as necessary.
Insufficient Torque:		
A)	Door switch malfunctioning	Check to make sure door is completely closed. Inspect door switch and dump valve. Replace or repair door switch and/or dump valve.
B)	Relief valve malfunctioning	Relief set too low, broken valve spring, contamination or defective seals.
C)	Damaged or worn pump parts	Inspect, repair, or replace.
D)	Slow pump speed	Assure proper pump speed for application.
E)	Improper system fluid	Check fluid viscosity and replace fluid if inadequate for operating temperature.
F)	Directional control valve set improperly	Check relief and directional control valve. Neutral should return slightly to reservoir.

TROUBLESHOOTING

HYDRAULIC TONG SYSTEM

	PROBLEM	SOLUTION
Insufficient Torque:		
G)	Damage tong motor	Inspect, repair, or replace.
H)	Restriction of supply line, excessive back pressure	Check to assure couplings are securely fastened.
I)	Defective gauge or load cell	Inspect, repair, or replace. Assure unit has been calibrated to proper arm length. NOTE: When using **CLINCHER®** integral backup system, it is the length of backup arm, NOT the tong arm length.
Difficulty Shifting Gears:		
A)	Broken key in shifting yoke	Inspect and replace key stock in shifting yoke.
B)	Worn or damaged shifting yoke pins	Inspect and replace broken or worn pins.
C)	Insufficient lubrication	Pump grease into both zerts located on shift housing.
D)	Detent ball bearing spring set too tight	Inspect and relieve pressure by adjusting set screw on shifting gear PN 55084.
Failure to Grip Tubulars:		
A)	Jaws move out from neutral, but fail to penetrate pipe.Tong not perpendicular.	Inspect die size and replace with correct dies for pipe. Wrong size dies for tubulars. Assure suspension of tong is perpendicular to tubulars. Adjust hanger as necessary.
B)	Jaws fail to move out of neutral. Brake band not tight enough, faulty cam followers, rust debris or damage to jaws.	Inspect for excessive wear on brake band. Inspect and replace defective cam followers. Remove rust and debris from jaws, and jaw pockets. Inspect jaw rollers and pins for wear, flats, and lubrication. Repair, replace, and lubricate as needed.
C)	Tong will not release from tubular. Brake band not tight enough, defective cam followers in cage plate, insufficient lubrication to jaw pin and roller.	Inspect for excessive wear on brake band. Inspect and replace defective cam followers. Remove rust and debris from jaws, and jaw pockets. Inspect jaw rollers and pins for wear, flats, and lubrication. Repair, replace, and lubricate as needed.

TROUBLESHOOTING

HYDRAULIC TONG SYSTEM

	PROBLEM	SOLUTION
Failure to Grip Tubulars:		
D)	Tong motor runs but ring gear does not rotate. Broken gears or defective shift in hydraulic tongs system.	Inspect and replace defective gears. Inspect and repair or replace defective shifting parts.
E)	Tong binds under light load. Worn or damaged cam followers, dumbell roller bearing, or idler bearing.	Inspect and replace defective parts.
F)	Ring gear rotates while control lever is in neutral.	Replace control valve.
G)	Shift will not stay in set position. Lost detent ball or spring.	Replace detent ball and spring.
H)	Hydraulic fluid leaking from motor. Damaged or worn motor shaft seal.	Replace motor shaft seal.
J)	Check Rear Jaw for overall length and spring dimensions. (See illustrations at front of manual.)	Inspect and replace any defective parts.

TROUBLESHOOTING

HYDRAULIC BACKUP SYSTEM

	PROBLEM	SOLUTION
Backup Fails to Hold Tubular:		
A)	Incorrect die for size tubular	Check pipe OD and match die size to pipe OD.
B)	Dies have material compacted in tooth area; worn teeth.	Clean dies with wire brush and inspect. Replace with new dies if necessary.
C)	Power unit pressure set incorrectly	Inspect relief valve on power unit to make sure enough system pressure is being delivered to backup.
D)	Counter balance valve not holding pressure	Remove side plates on backup. Bench test and replace the defective counter balance valve.
E)	Internal leakage in backup cylinder	Disconnect lines and bench test cylinder. Repair or replace as necessary.
F)	Jaws will not retract. Counter balance valve is stuck.	Replace counter balance valve.
G)	External leakage of cylinder	Repair or replace cylinder.
H)	Control valve set to neutral, but jaws extend.	Inspect control valve for damage and/or incorrect spool. Repair or replace as necessary.

RECOMMENDED SPARE PARTS LIST FOR REMOTE AREAS

Quantity	Part Number	Description
4	BUC4019	Tong Jaw Springs
4	58019	Tong Rear Jaw Die Clips
2	58065	Spring Retainer Post
2	58033	Left Tong Jaw Die Clips
2	58020	Right Tong Jaw Die Clips
2	BUCS5522	Top Jaw Die Clips
2	BUCS5525	Bottom Jaw Die Clips
2	BUCS5515	Top Cylinder Clips
2	BUCS5516	Bottom Cylinder Clips
2	SPG5500-S2	Rear Jaw Springs

TABLE OF CONTENTS

SECTION 7 CLJ5500 CLINCHER® TONG PARTS LISTS BUCS5500 CLINCHER® BACKUP PARTS LISTS

CLJ5500-03 / 5 1/2 STD **LOCKJAW™** TONG W/5 CAM & SPRING BRAKE ..... 7 - 5
CLJ5500-04 / 5 1/2 **LOCKJAW™** TONG-ALTERNATE W/5 CAM & HYD. BRAKE .. 7 - 13
45067-S6 / PIPING BRACE ASSEMBLY ..... 7 - 24
45091 / SHIFT ASSEMBLY ..... 7 - 24
51035B / INTEGRATED DOOR ASSEMBLY *(FOR PRODUCTIONS AFTER 11/2000)* . 7 - 25
51074 / ENCODER ASSEMBLY ..... 7 - 26
58018A / TONG DOOR ASSEMBLY *(FOR PRODUCTIONS BEFORE 11/2000)* ..... 7 - 26
58047A / MID BODY F/5 1/2 LJ TONG ..... 7 - 27
58050 / BRAKE BAND ASSY. F/ 5 1/2 ..... 7 - 27
58070 / HANGER BRACKET ASSEMBLY ..... 7 - 28
KITBRG-03 / BEARING KIT F/CLJ5500-03 & 4 ..... 7 - 29
SLV1000-01 / SELF LUBRICATED VALVE (NORMALLY CLOSED) ..... 7 - 30

BUCS5500 / 5 1/2 **LOCKJAW™** BACKUP ..... 7 - 31
BUCS5500-01 / 5 1/2 **LOCKJAW™** BACKUP W/AIR OPR. INTENSIFIER ..... 7 - 34
BUCS5505 / BUC.TOP PL. WELDMENT ..... 7 - 35
BUCS5506 / BUC.BOT. PL. WELDMENMT ..... 7 - 35
BUCS5532 / 5 1/2 LJ CYLINDER ASSEMBLY ..... 7 - 36
ASAP2184 / SEAL KIT F/ 5 1/2 LJ CYLINDER ..... 7 - 37
SLV1000-04 / N.C. ORIG.SPOOL VALVE W/VENT ..... 7 - 37
KITBOLT-19 / BOLT KIT F/BUCS5500 ..... 7 - 38
KITFIT-19 / FITTING KIT F/BUCS5500 ..... 7 - 40

BUCS5560 / 5 1/2 **LOCKJAW™** MOUNTING KIT & VALVE PACKAGE ..... 7 - 41
BUCS5509 / 5 1/2 **LOCKJAW™** HANGER ASSEMBLY ..... 7 - 41
BUCS5570 / 5 1/2 **LOCKJAW™** LEG ASSEMBLY *(2 REQD.)* ..... 7 - 42
VP5800 / VALVE PACKAGE 5 1/2 **LOCKJAW™** & STD ..... 7 - 43

SUPERIOR MANUFACTURING

Pick List

CLJ5500-03 / 5 1/2 STD LOCKJAW TONG

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00CLJ5500-03	PICKLIST F/5 1/2 STD LJ TONG W/5 DEG. CAM & SPRING BRAKE REV DATE: 04/25/02	each		1	_____
1001	ZERT 1/8" NPT	each	BIN-50	11	_____
1003	COTTER PIN 1/8" X 1"	each	50	2	_____
1004	DRIVE ZERT 3/16"	each	50	48	_____
1006	ROLL PIN 3/16" X 1"	each	50	1	_____
101	LOCKWASHER 1/4" GR8	each	55	2	_____
1011-B	ROLL PIN 1/8" X 1 1/4"	each	50	2	_____
102	FLATWASHER 1/4" GR8	each	54	2	_____
1024	NUT 3/8"-16	each	50	4	_____
1025	FLATWASHER 3/8" GR8	each	50	1	_____
1026	HI COLLAR LOCKWASHER 3/8"	each	50	32	_____
1027	LOCKWASHER 3/8" GR8 (134)	each	50	53	_____
1028	SET SCREW 3/8"-16 X 1/4"	each	50	1	_____
1029	SET SCREW 3/8"-16 X 1/2"	each	50	4	_____
103	HHCS 1/4"-20 X 1/2" GR8	each	55	2	_____
1041	SHCS 3/8"-16 X 1"	each	50	21	_____
1042	SHCS 3/8"-16 X 1 1/4"	each	50	28	_____
1044-A	SHCS 3/8"-16 X 3 1/2"	each	50	4	_____
1046	HHCS 3/8"-16 X 3/4" GR8	each	50	2	_____
1049	HHCS 3/8"-16 X 1 1/2" GR8	each	50	46	_____
1057	SHOULDER BOLT 3/8" SHANK x-3/4 LONG W/ 5/16-18 THD.	each	50	4	_____
1072	HHCS 3/8"-16 X 3 3/4" GR8	each	51	5	_____
1088	HHCS 3/4"-10 X 6" GR8	each	51	2	_____
110	HHCS 1/4"-20 X 2 1/4" GR8	each	57	4	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-03 / 5 1/2 STD LOCKJAW TONG

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1101	NUT 1/2" GR8	each	51	1	_____
1103	LOCKWASHER 1/2" GR8	each	51	19	_____
1108	SHCS 1/2"-13 X 3 1/2"	each	51	4	_____
1109	SHCS 1/2"-13 X 8 1/2"	each	51	1	_____
1110	HHCS 1/2"-13 X 1" GR8	each	51	4	_____
1111	HHCS 1/2"-13 X 1 1/4" GR8	each	51	9	_____
1151	5/8" LOCKWASHER GRADE 8	each	51	8	_____
1157	HHCS 5/8"-11 X 1 1/2" GR8	each	51	8	_____
1167	NYLOCK NUT 3/4"-10	each	52	2	_____
1171	LOCKWASHER 3/4" GR8	each	52	2	_____
1173	HHCS 3/4"-10 X 1 3/4" GR8	each	52	2	_____
1176	HHCS 3/4"-10 X 3" GR8	each	52	2	_____
1177	NYLOCK NUT 7/8"-14	each	52	9	_____
1178	JAM NUT 7/8"-14	each	52	9	_____
1215	NUT 1 1/4"-12	each	52	4	_____
1216	LOCKWASHER 1 1/4" GR8	each	52	4	_____
1219	JAM NUT 1 1/4"-12	each	52	2	_____
12501375	POLYPACK 1/8" CROSS SECTION 1 3/8 X 1 5/8 X 1/8	each	O1-A	1	_____
133	NUT 3/8"-16 GR8	each	55	2	_____
142	HHCS 3/8"-16 X 2" GR8	each	57	7	_____
1449	STREET EL 1/4"	each	S4-A	1	_____
1576	90 1/4"MNPT X 1/4"MJIC	each	S4-D	2	_____
1610	FLUSH PLUG 3/4" NPT	each	S4-G	2	_____
166	LOCKWASHER 1/2" GR8	each	55	3	_____
171	HHCS 1/2"-13 X 1 3/4" GR8	each	55	6	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-03 / 5 1/2 STD LOCKJAW TONG

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
209	HI-COLLAR LOCKWASHER 3/8"	each	56	7	_____
212	NYLOCK NUT 1/4"-20 GR8	each	56	4	_____
213	NYLOCK NUT 3/8"-16 GR8	each	56	2	_____
238	SHCS 3/8"-16 X 1 1/2"	each	56	32	_____
41037	ALUM. WASHER	each	M3-C	1	_____
45018	IDLER PAD	each	M3-E	4	_____
45031	DUMBELL ROLLER SHAFT (9) 1.0" O.D. STOCK	each	M3-F	7	_____
45047-S2	4.5 AND 5.5 STD. TONG HANDLES	each	M4-A	1	_____
45057	DUMBELL THRUST WASHER 2 3/4" O.D.STOCK	each	M4-A	20	_____
45067-S1	PAD EYE	each	M4-B	2	_____
45067-S2	VALVE SUPPORT	each	M4-B	2	_____
45067-S6	PIPING BRACE ASSEMBLY PICKLIST QTY BUILDS 2 ASSY'S	each	W	1	_____
45067-S7	DOOR SWITCH BASE MOUNT	each	M4-B	3	_____
45067-S8	DOOR SWITCH HOSE GUIDE	each	M4-B	1	_____
45070	ASSEMBLY OF PINION GEAR PICKLIST	each	5-C	1	_____
45071-S2	TURNS COUNTER NUT F/ TURNS COUNTER 4 1/2 & 5 1/2 STD.	each	M4-B	1	_____
45076	MOTOR SHAFT SPACER	each	M4-B	1	_____
45077-A	MTR. SFT. SEAL RETAINER	each	M4-C	1	_____
45080	ELBOW FLANGE KIT W168-12-20U	each	M4-C	2	_____
45091	SHIFT ASSEMBLY PICKLIST	each	M4-C	1	_____
45096	IDLER SHAFT	each	M4-C	2	_____
45097	IDLER SPACER (2)	each	M4-C	4	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-03 / 5 1/2 STD LOCKJAW TONG

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
45099	DOOR CAUTION PLATES F/ ALL TONG DOORS	each	M4-C	1	_____
45100-01	PINION GEAR	each	M4-C	1	_____
45101	HIGH GEAR	each	M4-C	1	_____
45122	DUMBELL ROLLER ASSEMBLY PICK LIST	each	M,5-D	10	_____
51035B	INTEGRATED DOOR ASSY. F/CLES5500, CLJ5500 TONGS PICKLIST	each		1	_____
51038	BEARING HOUSING	each	6-D	1	_____
51039	BEARING CAP	each	M4-E	1	_____
51067-S1	DOOR JAMB	each	M4-F	1	_____
51067-S3	CLUTCH HOUSING WELDMENT PICK LIST	each	M4-F	1	_____
51070	BEARING CAP	each	6-E	1	_____
51070-04	MOD. BEARING CAP-ENCODER	each	6-E	1	_____
51072	DRIVE GEAR	each	M4-F	1	_____
51074	ENCODER ASSEMBLY PICKLIST	each		1	_____
51095	IDLER GEAR W/0 MICRO CAM	each	M4-F	2	_____
51099	LOW GEAR	each	M5-A	1	_____
52009	MOTOR SHAFT F/CLE5515 & CLJ5500	each	M5-A	1	_____
55087-01	EXTRACTION TOOL,5/8 ALLEN NUT, CAM FOLLOWER PICK LIST	each	M6-B	1	_____
55113-S4	TONG DOOR HANDLE	each	M6-C	1	_____
58001	TONG JAW(RIGHT)F/ 5 1/2 LOCKJAW TONG	each	M6-E	1	_____
58002	TONG JAW(LEFT)F/5 1/2 STD. LOCKJAW TONG	each	M6-E	1	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-03 / 5 1/2 STD LOCKJAW TONG

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
58006	DOOR PIVOT PIN F/ 5 1/2 LOCKJAW TONG	each	M6-E	2	_____
58007	CAGE PLATE SPACER CLJ5500 LOCKJAW TONG	each	M6-E	2	_____
58008A	TOP TONG PLATE F/5 1/2" LOCKJAW TONG	each		1	_____
58009-S2	BRAKE ADJUSTMENT BLOCK F/ 5 1/2 LOCKJAW TONG	each	M6-E	2	_____
58009-S5	EYE BOLT RETAINER BRACKET 5 1/2 LOCKJAW TONG	each	M6-E	2	_____
58009A	BOTTOM TONG PLATE F/5 1/2"LJ TONG	each		1	_____
58010	LEG COLLAR WELDMENT F 5 1/2 LJ TONG PICKLIST	each		2	_____
58015	REAR JAW HSNG. F/ 5 1/2 LOCKJAW TONG	each	M6-E	1	_____
58016	REAR JAW PLUNGER F/ 5 1/2 LOCKJAW TONG	each	1-B	1	_____
58019	DIE CLIP F/ CL5800 LOCKJAW TONG	each	M6-E	4	_____
58020	RIGHT SIDE TONG DOOR RETAINER	each	M6-E	2	_____
58029	LOCKING PIN CL5800 LOCKJAW TONG	each	M6-F	1	_____
58031	DOOR ROLLER PIN CL5800 LOCKJAW TONG	each	M6-F	2	_____
58032	CAGE PLATE ACCESS COVER CL5800 LOCKJAW TONG	each	M6-F	1	_____
58033	LEFT SIDE TONG DOOR RETAINER-5 1/2 LOCKJAW TONG	each	M6-F	2	_____
58035	HOSE 1/4" X 10" FJIC X FJIC PARKER SINGLE WIRE	each		2	_____
58036	RING GEAR LOCKING PIN CL5800 LOCKJAW TONG	each	M6-F	2	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-03 / 5 1/2 STD LOCKJAW TONG

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
58037	FRONT FOLLOWER CL5800 LOCKJAW TONG	each	M6-F	28	_____
58038	GAUGE MOUNT	each	M6-F	1	_____
58040	HOSE 1 1/4" X 42" MNPT XFJIC	each		2	_____
58041	HOSE 1" X 46" MNPT X FJIC	each		1	_____
58042	HOSE 1/4" X 23" MNPT X FJIC	each		1	_____
58043	HOSE 3/4" X 36" FJIC X FJIC	each		2	_____
58044	HOSE 1/4" X 19" FJIC X FJIC	each		2	_____
58045	HOSE 1/4" X 13" MNPT X FJIC	each		1	_____
58046	HOSE 1/4" X 26" FJIC X FJIC	each		1	_____
58047	HOSE 1/4" X 34" FJIC X FJIC	each		1	_____
58047A	MID BODY F/5 1/2 LJ TONG PICK LIST	each		1	_____
58048-S1	BRAKE ARM BUSHING- GARLOCK 14DU06	each	S2-F	2	_____
58049	BRAKE HUB F/ 5 1/2 LOCKJAW TONG	each	M6-F	1	_____
58050	BRAKE BAND ASSY. F/ 5 1/2 LOCKJAW TONG	each	16-WALL	1	_____
58051	BRAKE ADJUSTMENT CLEVIS F/ 5 1/2 LOCKJAW TONG MOD.PT# YE-16 YOKE	each	M7-A	2	_____
58052	CLEVIS PIN REID P/N YP-36	each	M7-A	2	_____
58052-C	COTTER PIN 1/8" X 1"	each	M7-A	2	_____
58054	LOCKING PIN CABLE FPC-6N F/ 5 1/2 LJ TONG	each	M7-A	1	_____
58055	EYE BOLT 3/8"-16 X 3" EB-22	each	M7-A	2	_____
58056	SPRING # 5292--EXT .750"OD, .125" WIRE, 4.06" OAL	each	M7-A	2	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-03 / 5 1/2 STD LOCKJAW TONG

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
58059	DOOR ROLLER F/ CLJ5800 LJ TONG USES 1 BUSHING 58059-S1	each	M7-A	2	_____
58059-S1	DOOR ROLLER BUSHING 12DU16 F/ CLJ 5500	each	S2-F	2	_____
58060	BRAKE BAND ROLLER SHAFT F/ 5 1/2 LOCKJAW TONG	each	M7-A	2	_____
58062	VALVE MOUNT PLATE	each	M7-B	1	_____
58063	SET SCREW 5/8"-11 X 1 1/4" W/NYLOCK PATCH-COARSE THR.	each	M7-B	2	_____
58065	SPRING RETAINER POST	each	M7-B	2	_____
58066	REAR JAW ROLLER EXCLUDES 2 GARLOCK BUSHING 58077	each	M7-B	2	_____
58068	TOP CAGE PL. F/ 5.7" CAM F/ 5 1/2 STD LOCKJAW TONG	each	31-E	1	_____
58068-C	COTTER PIN 1/8" X 1 1/2"	each	M7-B	2	_____
58069	BOT. CAGE PL. F/ 5.7" CAM 5 1/2 STD. LOCKJAW TONG	each		1	_____
58070	HANGER BRACKET ASSEMBLY PICKLIST	each	25-B	1	_____
58072	015-61-021-37-71 (BUILD HOUS 13/8 W/ SUP. SHAFT(52009)	each	S1-E	1	_____
58073	RIGHT BRACE LINKAGE GUARD F/ 5 1/2 LOCKJAW TONG	each	M7-B	1	_____
58074	LEFT BRACE LINKAGE GUARD F/ 5 1/2 LOCKJAW TONG	each	M7-B	1	_____
58076	ALLEN NUT 5/8"-18 MODIFIED PN 1163 FINE THREAD SHAVED F/5 1/2 LOCKJAW	each	M7-B	34	_____
58077	REAR JAW ROLLER BUSHING 18DU10(GARLOCK) F/ CLJ 5500 2 REQUIRED	each	S2-F	4	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-03 / 5 1/2 STD LOCKJAW TONG

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
58078	REAR JAW PIN F/ GARLOCK BUSHING CL5800 LOCKJAW TONG	each	M7-B	1	_____
58079	GARLOCK BUSH-20DU12 PIVOT PIN BUSH-5 1/2LJ REAR JAW ROLL BUSH-7 5/8 LJ	each	M2-F	8	_____
58081	GUIDE PLATE CLIP	each	1-E	1	_____
58084	RING GEAR F/ CLJ5500 5 DEGREE CAM	each		1	_____
58085	INSERT F/ 5" CAM RING GEAR 5 1/2 STD. LOCKJAW TONG	each	M7-C	1	_____
58101	PULL DOWEL PIN 3/8" X 1 3/4" REID HPD-48	each	M7-C	2	_____
76113-S5	DOOR SWITCH COLLAR	each	M10-D	1	_____
76128	DOOR SWITCH BASE WELDMENT PICKLIST	each	25-D WELD	1	_____
A20-A1327135	DETENT SPRING 391-3581-130	each	S11-B	1	_____
BUC4019	DOOR SPRING #733--EXT. .562" OD, .072' WIRE, 2.88" OAL	each	M11-C	4	_____
KITBRG-03	BEARING KIT F/CLJ5500-03 & 4 5 1/2" LOCKJAW TONG	each		1	_____
MCN-1377	SEAL FOR RINEER 1-3/8 X 1-5/8 X 1/8	each	S1-A	1	_____
SLV1000-01	N.C. SELF LUBRICATED VALVE NORMALLY CLOSED/DOOR SWITCH PICKLIST	each	M19-C	1	_____
SPG5500-S1	END PLATES W/ COUNTERBORE 5 1/2 LOCKJAW TONG	each	1-A	2	_____
SPG5500-S2	POLYURETHANE 95A-3" OD REAR JAW SPRING	each	M19-C	1	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-04 / 5 1/2 LOCKJAW TONG-ALTERNATE

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00CLJ5500-04	PICKLIST F/5 1/2 LJ TONG ALT W/5 DEG. CAM & HYD. BRAKE REV DATE: 04/25/02	each		1	_____
1001	ZERT 1/8" NPT	each	BIN-50	11	_____
1004	DRIVE ZERT 3/16"	each	50	48	_____
1006	ROLL PIN 3/16" X 1"	each	50	1	_____
1011-B	ROLL PIN 1/8" X 1 1/4"	each	50	2	_____
1025	FLATWASHER 3/8" GR8	each	50	1	_____
1026	HI COLLAR LOCKWASHER 3/8"	each	50	32	_____
1027	LOCKWASHER 3/8" GR8 (134)	each	50	53	_____
1028	SET SCREW 3/8"-16 X 1/4"	each	50	1	_____
1029	SET SCREW 3/8"-16 X 1/2"	each	50	4	_____
1041	SHCS 3/8"-16 X 1"	each	50	7	_____
1042	SHCS 3/8"-16 X 1 1/4"	each	50	14	_____
1044-A	SHCS 3/8"-16 X 3 1/2"	each	50	4	_____
1046	HHCS 3/8"-16 X 3/4" GR8	each	50	2	_____
1049	HHCS 3/8"-16 X 1 1/2" GR8	each	50	46	_____
1057	SHOULDER BOLT 3/8" SHANK x-3/4 LONG W/ 5/16-18 THD.	each	50	4	_____
1072	HHCS 3/8"-16 X 3 3/4" GR8	each	51	5	_____
1088	HHCS 3/4"-10 X 6" GR8	each	51	2	_____
110	HHCS 1/4"-20 X 2 1/4" GR8	each	57	4	_____
1101	NUT 1/2" GR8	each	51	1	_____
1103	LOCKWASHER 1/2" GR8	each	51	16	_____
1106	SHCS 1/2"-13 X 1 1/4"	each	51	1	_____
1108	SHCS 1/2"-13 X 3 1/2"	each	51	4	_____
1109	SHCS 1/2"-13 X 8 1/2"	each	51	1	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-04 / 5 1/2 LOCKJAW TONG-ALTERNATE

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1110	HHCS 1/2"-13 X 1" GR8	each	51	4	_____
1111	HHCS 1/2"-13 X 1 1/4" GR8	each	51	9	_____
1167	NYLOCK NUT 3/4"-10	each	52	2	_____
1171	LOCKWASHER 3/4" GR8	each	52	2	_____
1173	HHCS 3/4"-10 X 1 3/4" GR8	each	52	2	_____
1176	HHCS 3/4"-10 X 3" GR8	each	52	2	_____
1177	NYLOCK NUT 7/8"-14	each	52	9	_____
1178	JAM NUT 7/8"-14	each	52	9	_____
1215	NUT 1 1/4"-12	each	52	4	_____
1216	LOCKWASHER 1 1/4" GR8	each	52	4	_____
1219	JAM NUT 1 1/4"-12	each	52	2	_____
12501375	POLYPACK 1/8" CROSS SECTION 1 3/8 X 1 5/8 X 1/8	each	O1-A	1	_____
133	NUT 3/8"-16 GR8	each	55	2	_____
1400-A	PIPE NIPPLE 1/2" X 3" SCH.80	each	S3-E	1	_____
1400-B	PIPE NIPPLE 1/2" X 4" SCH.80	each	S3-E	1	_____
1403	PIPE NIPPLE 1/2" X 7 1/4" SCH.80	each	S3-E	1	_____
1406	PIPE NIPPLE 3/4" X 5" SCH.80	each	S3-E	3	_____
1418	PIPE NIPPLE 1" X 3" SCH.80	each	S3-F	1	_____
142	HHCS 3/8"-16 X 2" GR8	each	57	7	_____
1420	PIPE NIPPLE 1" X 4" SCH.80	each	S3-F	1	_____
1425	PIPE NIPPLE 1" X 8" SCH.80	each	S3-F	2	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-04 / 5 1/2 LOCKJAW TONG-ALTERNATE

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1431	QUICK DISCONNECT 1/2" MALE SNAPTITE (VHN8-8F)	each	S3-G	1	_____
1441	QUICK DISC.1"MALE-WING TYPE	each	S3-G	1	_____
1446	QUICK DISCONNECT 1 1/4" M WING TYPE	each	S4-A	1	_____
1449	STREET EL 1/4"	each	S4-A	3	_____
1451	STREET EL 1/2" FORGED	each	S4-A	1	_____
1454	REDUCER BUSHING 1" X 1/4"	each	S4-A	1	_____
1457	HEX NIPPLE 3/8"	each	S4-A	1	_____
1459	90 1/2" FNPT X FNPT	each	S4-B	1	_____
1460	HEX NIPPLE 1/2"	each	S4-B	1	_____
1462	HEX NIPPLE 1"	each	S4-B	5	_____
1463	HEX NIPPLE 1 1/4"	each	S4-B	1	_____
1469	ADAPTER 1"MNPT X 1"MJIC STRAIGHT	each	S4-B	1	_____
1470	STRAIGHT	each	S4-B	1	_____
1471-L	BRANCH TEE 1/4" MALE	each	S4-B	3	_____
1486	REDUCER BUSHING 3/8" X 1/4"	each	S4-B	2	_____
1487	90 3/8" MNPT X 1/4" TUBE	each	S4-C	1	_____
1495	REDUCER BUSHING 3/4" X 1/2"	each	S4-C	3	_____
1499	REDUCER BUSHING 1 1/4" X 1"	each	S4-C	4	_____
1562	ADAPTER 1/4"MNPT X 1/4"MJIC STRAIGHT	each	S4-C	2	_____
1575	90 1/4"MNPT X 1/4"TUBE	each	S4-D	3	_____
1576	90 1/4"MNPT X 1/4"MJIC	each	S4-D	3	_____
1579-B	VENT 1/8"NPT HUBER P/N MV001A	each	S4-E	4	_____
1585	90 3/4" M X MNPT	each	S4-E	1	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-04 / 5 1/2 LOCKJAW TONG-ALTERNATE

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1586	90 SWVL 3/4"FNPT X FNPT PARKER FORGED	each	S4-E	2	_____
1588	90 3/4" FNPT X 3/4" FNPT	each	S4-E	1	_____
1590	3/4" MJIC X MNPT 90	each	S4-E	1	_____
1591	90 1" FNPT X FNPT	each	S4-E	1	_____
1593	BRANCH TEE 1/4" TUBE	each	S4-F	1	_____
1602	TEE 1 1/4" FNPT	each	S4-F	1	_____
1605	90 1 1/4" FNPT X FNPT	each	S4-F	1	_____
1607	FLUSH PLUG 1/8" NPT	each	S4-G	3	_____
1608	HEX PLUG O RING 3/8"	each	S4-G	1	_____
1609	FLUSH PLUG 3/8" NPT	each	S4-G	1	_____
1610	FLUSH PLUG 3/4" NPT	each	S4-G	2	_____
1611	FLUSH PLUG 1" MNPT	each	S4-G	5	_____
1616	RUN TEE 1"	each	S4-G	2	_____
1617	90 1" MNPT X 1" MJIC	each	S4-G	1	_____
1625	90 1/2" FNPT X MJIC	each	S4-G	2	_____
1652	1/8" MNPT X 1/8" FNPT 90	each	S5-B	2	_____
166	LOCKWASHER 1/2" GR8	each	55	3	_____
171	HHCS 1/2"-13 X 1 3/4" GR8	each	55	3	_____
209	HI-COLLAR LOCKWASHER 3/8"	each	56	7	_____
212	NYLOCK NUT 1/4"-20 GR8	each	56	4	_____
237	SHCS 3/8"-16 X 1 1/4"	each	56	7	_____
238	SHCS 3/8"-16 X 1 1/2"	each	56	14	_____
41037	ALUM. WASHER	each	M3-C	1	_____
45018	IDLER PAD	each	M3-E	4	_____
45025	WASHER	each	M3-E	4	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-04 / 5 1/2 LOCKJAW TONG-ALTERNATE

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
45031	DUMBELL ROLLER SHAFT (9) 1.0" O.D. STOCK	each	M3-F	5	_____
45046-S2	LEG COLLAR	each	M4-A	2	_____
45057	DUMBELL THRUST WASHER 2 3/4" O.D.STOCK	each	M4-A	20	_____
45067-S1	PAD EYE	each	M4-B	2	_____
45067-S2	VALVE SUPPORT	each	M4-B	2	_____
45067-S6	PIPING BRACE ASSEMBLY PICKLIST QTY BUILDS 2 ASSY'S	each	W	1	_____
45067-S7	DOOR SWITCH BASE MOUNT	each	M4-B	3	_____
45067-S8	DOOR SWITCH HOSE GUIDE	each	M4-B	1	_____
45068	WASHER	each	M4-B	1	_____
45070	ASSEMBLY OF PINION GEAR PICKLIST	each	5-C	1	_____
45071-S2	TURNS COUNTER NUT F/ TURNS COUNTER 4 1/2 & 5 1/2 STD.	each	M4-B	1	_____
45076	MOTOR SHAFT SPACER	each	M4-B	1	_____
45077-A	MTR. SFT. SEAL RETAINER	each	M4-C	1	_____
45080	ELBOW FLANGE KIT W168-12-20U	each	M4-C	2	_____
45087	BALL HANDLE #B-15 (1)	each	S2-G	1	_____
45091	SHIFT ASSEMBLY PICKLIST	each	M4-C	1	_____
45096	IDLER SHAFT	each	M4-C	2	_____
45097	IDLER SPACER (2)	each	M4-C	4	_____
45099	DOOR CAUTION PLATES F/ ALL TONG DOORS	each	M4-C	1	_____
45100-01	PINION GEAR	each	M4-C	1	_____
45101	HIGH GEAR	each	M4-C	1	_____
45122	DUMBELL ROLLER ASSEMBLY PICK LIST	each	M,5-D	10	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-04 / 5 1/2 LOCKJAW TONG-ALTERNATE

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
51035B	INTEGRATED DOOR ASSY. F/CLES5500, CLJ5500 TONGS PICKLIST	each		1	_____
51038	BEARING HOUSING	each	6-D	1	_____
51039	BEARING CAP	each	M4-E	1	_____
51067-S1	DOOR JAMB	each	M4-F	1	_____
51067-S3	CLUTCH HOUSING WELDMENT PICK LIST	each	M4-F	1	_____
51070	BEARING CAP	each	6-E	2	_____
51070-04	MOD. BEARING CAP-ENCODER	each	6-E	1	_____
51072	DRIVE GEAR	each	M4-F	1	_____
51074	ENCODER ASSEMBLY PICKLIST	each		1	_____
51095	IDLER GEAR W/0 MICRO CAM	each	M4-F	2	_____
51099	LOW GEAR	each	M5-A	1	_____
52009	MOTOR SHAFT F/CLE5515 & CLJ5500	each	M5-A	1	_____
55087-01	EXTRACTION TOOL,5/8 ALLEN NUT, CAM FOLLOWER PICK LIST	each	M6-B	1	_____
55113-S4	TONG DOOR HANDLE	each	M6-C	1	_____
58001	TONG JAW(RIGHT)F/ 5 1/2 LOCKJAW TONG	each	M6-E	1	_____
58002	TONG JAW(LEFT)F/5 1/2 STD. LOCKJAW TONG	each	M6-E	1	_____
58006	DOOR PIVOT PIN F/ 5 1/2 LOCKJAW TONG	each	M6-E	2	_____
58007	CAGE PLATE SPACER CLJ5500 LOCKJAW TONG	each	M6-E	2	_____
58008A	TOP TONG PLATE F/5 1/2" LOCKJAW TONG	each		1	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-04 / 5 1/2 LOCKJAW TONG-ALTERNATE

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
58009-S2	BRAKE ADJUSTMENT BLOCK F/ 5 1/2 LOCKJAW TONG	each	M6-E	2	_____
58009A	BOTTOM TONG PLATE F/5 1/2"LJ TONG	each		1	_____
58010	LEG COLLAR WELDMENT F 5 1/2 LJ TONG PICKLIST	each		2	_____
58015	REAR JAW HSNG. F/ 5 1/2 LOCKJAW TONG	each	M6-E	1	_____
58016	REAR JAW PLUNGER F/ 5 1/2 LOCKJAW TONG	each	1-B	1	_____
58019	DIE CLIP F/ CL5800 LOCKJAW TONG	each	M6-E	4	_____
58020	RIGHT SIDE TONG DOOR RETAINER	each	M6-E	2	_____
58029	LOCKING PIN CL5800 LOCKJAW TONG	each	M6-F	1	_____
58030	TONG LEG F/ 5 1/2 LOCKJAW 5 1/2 LOCKJAW TONG	each	18-E	2	_____
58031	DOOR ROLLER PIN CL5800 LOCKJAW TONG	each	M6-F	2	_____
58032	CAGE PLATE ACCESS COVER CL5800 LOCKJAW TONG	each	M6-F	2	_____
58033	LEFT SIDE TONG DOOR RETAINER-5 1/2 LOCKJAW TONG	each	M6-F	2	_____
58035	HOSE 1/4" X 10" FJIC X FJIC PARKER SINGLE WIRE	each		2	_____
58036	RING GEAR LOCKING PIN CL5800 LOCKJAW TONG	each	M6-F	2	_____
58037	FRONT FOLLOWER CL5800 LOCKJAW TONG	each	M6-F	28	_____
58038	GAUGE MOUNT	each	M6-F	1	_____
58040	HOSE 1 1/4" X 42" MNPT XFJIC	each		2	_____
58041	HOSE 1" X 46" MNPT X FJIC	each		1	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-04 / 5 1/2 LOCKJAW TONG-ALTERNATE

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
58042	HOSE 1/4" X 23" MNPT X FJIC	each		1	_____
58043	HOSE 3/4" X 36" FJIC X FJIC	each		2	_____
58044	HOSE 1/4" X 19" FJIC X FJIC	each		2	_____
58045	HOSE 1/4" X 13" MNPT X FJIC	each		1	_____
58046	HOSE 1/4" X 26" FJIC X FJIC	each		1	_____
58047	HOSE 1/4" X 34" FJIC X FJIC	each		1	_____
58047A	MID BODY F/5 1/2 LJ TONG PICK LIST	each		1	_____
58048-S1	BRAKE ARM BUSHING-GARLOCK 14DU06	each	S2-F	2	_____
58049	BRAKE HUB F/ 5 1/2 LOCKJAW TONG	each	M6-F	1	_____
58050	BRAKE BAND ASSY. F/ 5 1/2 LOCKJAW TONG	each	16-WALL	1	_____
58054	LOCKING PIN CABLE FPC-6N F/ 5 1/2 LJ TONG	each	M7-A	1	_____
58058	DUMP VALVE 3/4" - DENISON R4V06-5A9-10A1 W/O SEL. VENT VALVE	each	M7-A	1	_____
58059	DOOR ROLLER F/ CLJ5800 LJ TONG USES 1 BUSHING 58059-S1	each	M7-A	2	_____
58059-S1	DOOR ROLLER BUSHING 12DU16 F/ CLJ 5500	each	S2-F	2	_____
58060	BRAKE BAND ROLLER SHAFT F/ 5 1/2 LOCKJAW TONG	each	M7-A	2	_____
58061A	LEFT SIDE CYL MTG BRKT F/ 5 1/2" LOCKJAW TONG PICKLIST	each	M7-A	1	_____
58061B	RIGHT CYL MTNG. BRACKET F/ 5 1/2 LOCKJAW TONG PICKLIST	each	M7-A	1	_____
58062	VALVE MOUNT PLATE	each	M7-B	1	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-04 / 5 1/2 LOCKJAW TONG-ALTERNATE

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
58063	SET SCREW 5/8"-11 X 1 1/4" W/NYLOCK PATCH-COARSE THR.	each	M7-B	2	_____
58065	SPRING RETAINER POST	each	M7-B	2	_____
58066	REAR JAW ROLLER EXCLUDES 2 GARLOCK BUSHING 58077	each	M7-B	1	_____
58066A-L	BRAKE ARM-LEFT	each	M7-B	1	_____
58066A-R	BRAKE ARM-RIGHT	each	M7-B	1	_____
58068	TOP CAGE PL. F/ 5.7" CAM F/ 5 1/2 STD LOCKJAW TONG	each	31-E	1	_____
58068-C	COTTER PIN 1/8" X 1 1/2"	each	M7-B	4	_____
58069	BOT. CAGE PL. F/ 5.7" CAM 5 1/2 STD. LOCKJAW TONG	each		1	_____
58070	HANGER BRACKET ASSEMBLY PICKLIST	each	25-B	1	_____
58072	015-61-021-37-71 (BUILD HOUS 13/8 W/ SUP. SHAFT(52009)	each	S1-E	1	_____
58073	RIGHT BRACE LINKAGE GUARD F/ 5 1/2 LOCKJAW TONG	each	M7-B	1	_____
58074	LEFT BRACE LINKAGE GUARD F/ 5 1/2 LOCKJAW TONG	each	M7-B	1	_____
58076	ALLEN NUT 5/8"-18 MODIFIED PN 1163 FINE THREAD SHAVED F/5 1/2 LOCKJAW	each	M7-B	34	_____
58077	REAR JAW ROLLER BUSHING 18DU10(GARLOCK) F/ CLJ 5500 2 REQUIRED	each	S2-F	4	_____
58078	REAR JAW PIN F/ GARLOCK BUSHING CL5800 LOCKJAW TONG	each	M7-B	1	_____
58079	GARLOCK BUSH-20DU12 PIVOT PIN BUSH-5 1/2LJ REAR JAW ROLL BUSH-7 5/8 LJ	each	M2-F	8	_____
58082	BRAKE BAND ROLLER SHAFT REAR	each	M7-C	2	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-04 / 5 1/2 LOCKJAW TONG-ALTERNATE

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
58084	RING GEAR F/ CLJ5500 5 DEGREE CAM	each		1	_____
58085	INSERT F/ 5" CAM RING GEAR 5 1/2 STD. LOCKJAW TONG	each	M7-C	2	_____
58087	PRESSURE RED. VALVE 1PA11-F310-SV DANFOSS	each	M7-C	1	_____
58099	HIGH PRESSURE CHECK VALVE 1" CVH145-1000N DMIC	each	M7-C	1	_____
58100	Z-20-5/16/18-4-SS THREADED ORIFICE INSERT(SS)	each	M7-C	1	_____
58101	PULL DOWEL PIN 3/8" X 1 3/4" REID HPD-48	each	M7-C	2	_____
58102	EXT. SPRING-650--.625"OD, .072" WIRE, 2.50" OAL	each	M7-C	2	_____
71040	DPBM-LBN-MAB - SUN 2-WAY DIR. CONTROL VALVE	each	M8-A	1	_____
72032	BRAKE CYLINDER-CLIPPARD 7SD-2	each	M8-B	4	_____
72032-1	ROD CLEVIS ASSY.-15015	each	M8-B	4	_____
76029	1/4" BALL VALVE BVH 0250N	each	M10-A	1	_____
76128	DOOR SWITCH BASE WELDMENT PICKLIST	each	25-D WELD	1	_____
A20-A1327135	DETENT SPRING 391-3581-130	each	S11-B	1	_____
A20-V1526K-8	HANDLE A/20 8" 341 9100 002	each	S11-D	1	_____
BUC4019	DOOR SPRING #733--EXT. .562" OD, .072' WIRE, 2.88" OAL	each	M11-C	2	_____
KITBRG-03	BEARING KIT F/CLJ5500-03 & 4 5 1/2" LOCKJAW TONG	each		1	_____
MCN-1377	SEAL FOR RINEER 1-3/8 X 1-5/8 X 1/8	each	S1-A	1	_____

SUPERIOR MANUFACTURING

Pick List

CLJ5500-04 / 5 1/2 LOCKJAW TONG-ALTERNATE

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
SLV1000-01	N.C. SELF LUBRICATED VALVE NORMALLY CLOSED/DOOR SWITCH PICKLIST	each	M19-C	1	_____
SPG5500-S1	END PLATES W/ COUNTERBORE 5 1/2 LOCKJAW TONG	each	1-A	2	_____
SPG5500-S2	POLYURETHANE 95A-3" OD REAR JAW SPRING	each	M19-C	1	_____
VA20-AA440	INLET W/O RELIEF VALVE	each	S11-C	1	_____
VA20-MA3	WORK SECTION	each	S11-C	1	_____
VA20-MRV-1	RELIEF CARTRIDGE	each	S11-B	1	_____
VA20-TR44	OUTLET	each	S11-D	1	_____

24-Apr-02
8:09 AM

SUPERIOR MANUFACTURING

Pick List

45067-S6 / PIPING BRACE ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
0045067-S6	PICKLIST F/PIPING BRACE ASSY REV DATE: 06/07/01 SEE NOTES F/45067-S6	each		1	_____
100	NUT 1/4"-20 GR.8	each	55	8	_____
1007	U BOLT 1/4"-20 X 1 "	each	M1-B	2	_____
101	LOCKWASHER 1/4" GR8	each	55	8	_____
1014	U BOLT 1/4" X 1 1/4"	each	M1-B	2	_____
45067-S10	LARGE PIPING BRACE WELDMENT	each	W	2	_____

24-Apr-02
8:14 AM

SUPERIOR MANUFACTURING

Pick List

45091 / SHIFT ASSEMBLY PICKLIST

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
45091	PICKLIST F/SHIFT ASSY REV DATE: 12/12/01 SEE NOTES F/45091	each		1	_____
1025	FLATWASHER 3/8" GR8	each	50	2	_____
1027	LOCKWASHER 3/8" GR8 (134)	each	50	2	_____
1040	SET SCREW 3/8"-16 X 1 1/4"	each	50	1	_____
1046	HHCS 3/8"-16 X 3/4" GR8	each	50	2	_____
45072	SHIFTING YOKE WELDMENT PICK LIST	each	M4-B	1	_____
45092	FLANGE BEARING SELF-LUBRICA.	each	M4-C	1	_____
45106	FLANGE BEARING SELF-LUBRICA. SPLIT	each	M4-D	2	_____
45142	STRAIGHT YOKE HANDLE	each	M4-D	1	_____
45143	SHIFTER SHAFT	each	M4-D	1	_____
55071	BALL HANDLE #B6	each	S2-G	1	_____

SUPERIOR MANUFACTURING

Pick List

51035B / INTEGRATED DOOR ASSY.

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
0051035B	PICKLIST F/INTEGRATED DOOR REV DATE: 09/04/01 SEE NOTES F/51035B	each		1	_____
1001	ZERT 1/8" NPT	each	BIN-50	1	_____
1027	LOCKWASHER 3/8" GR8 (134)	each	50	8	_____
1029	SET SCREW 3/8"-16 X 1/2"	each	50	2	_____
1049	HHCS 3/8"-16 X 1 1/2" GR8	each	50	8	_____
1103	LOCKWASHER 1/2" GR8	each	51	1	_____
1177	NYLOCK NUT 7/8"-14	each	52	1	_____
1178	JAM NUT 7/8"-14	each	52	1	_____
171	HHCS 1/2"-13 X 1 3/4" GR8	each	55	1	_____
1955	BUSHING IR-141816	each	S5-F	1	_____
1955-A	TOP DOOR BUSHING FROM/ 1955	each	S5-F	1	_____
45025	WASHER	each	M3-E	2	_____
45054	DOOR SHAFT (1) 1.0" O.D. STOCK	each	M4-A	1	_____
51036	DOOR BUSHING	each	6-D	2	_____
51037	BOTTOM DOOR PLATE F/CLES5500 INTEGRATED DOOR	each		1	_____
51040	TONG DOOR UPRIGHT F/51035B TONG DOOR	each		1	_____
51041	DOOR HANDLE F/CLES5500 INTEGRATED DOOR	each	M4-E	1	_____
51042	DOOR SWITCH COLLAR F/CLES5500 INTEGRATED DOOR	each		1	_____
51043	TOP DOOR PLATE F/CLES5500 INTEGRATED DOOR	each		1	_____
76131	DOOR SWITCH ADJ. SLEEVE	each	M10-E	1	_____

16-May-01
2:16 PM

SUPERIOR MANUFACTURING

Pick List

51074 / ENCODER ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1034	SET SCREW 1/4" #10-32	each		1	_____
1041	SHCS 3/8"-16 X 1"	each	236	2	_____
1101	NUT 1/2" GR8	each	165	1	_____
1276	SCREW, MACHINE 6-32 X 3/8" L BRASS	each		4	_____
40034	COVER PLATE - SQUARE	each	3-C	1	_____
51031	ENCODER COUPLING MOUNT	each		1	_____
51075	ENCODER MOUNTING PLATE	each	6-E	1	_____
51076	ENCODER FEMALE COUPLING	each	6-E	1	_____
51077-01	ENCODER MALE COUP. 1/2-20 NF F/ BUCK. UNIT	each		1	_____

16-May-01
10:56 AM

SUPERIOR MANUFACTURING

Pick List

58018A / TONG DOOR WELDMENT

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
0058018A	PICKLIST F/TONG DOOR WELD. F/PRODUCTIONS BEFORE 11/2000 OBSOLETE 11/28/00	each		1	_____
41035-S3	TONG DOOR HANDLE	each	21-E	1	_____
51035-S3	TONG DOOR SPACER F/5 1/2 S & 5 1/2 L.J TONGS	each	23-B	1	_____
51035A-S2	FRONT DOOR COVER F/CLES5500 & CLES5500HT TONG	each		1	_____
58018A-S1	TONG DOOR PLATE (NEW STYLE) F/CLJ5500 TONG	each		2	_____
76113-S5	DOOR SWITCH COLLAR	each	25-D(W)	1	_____

16-May-01
11:56 AM

SUPERIOR MANUFACTURING

Pick List

58047A / MID BODY F/5 1/2 LJ TONG

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
45033	LOCKJAW NAME PLATE 1/4" LASER CUT	each	22-B (W)	1	_____
45047-S1	MEDIUM **CLINCHER®** NAME	each	22-C WELD	1	_____
51047-S3	MED. 5 1/2" NUMBER	each	23-B WELD	2	_____
51047A-S1	FRONT RADIUS F/MID BODY F/5 1/2 S. & 5 1/2 LJ TONG SUB PART #1	each		2	_____
51047A-S2	SUB PART #2 F/MID BODY F/5 1/2 S. & 5 1/2 LJ TONG	each		2	_____
51047A-S3	SUB PART #5 F/MID BODY F/5 1/2 S.& 5 1/2 LJ TONG	each		1	_____
51047A-S4	SUB PART #4 F/MID BODY F/5 1/2 S.& 5 1/2LJ TONG	each	23-C	2	_____
51047A-S5	REAR RADIUS F/MID BODY F/5 1/2 S. & 5 1/2 LJ TONG SUB PART #5	each		2	_____
51047A-S6	TONG HANDLE 5 1/2 S & 5 1/2 LJ TONGS	each	23-B	1	_____

24-Apr-02
9:58 AM

SUPERIOR MANUFACTURING

Pick List

58050 / BRAKE BAND ASSY. F/ 5 1/2

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1663	1/4 X 2" BRAKE BAND MAT. x 25 FT LG ROLL	each	S10-A	1	_____
58050-S1	BRAKE BAND F/ 5 1/2 LOCKJAW TONG	each		1	_____
58050-S2	BRAKE PIN F/ 5 1/2 LOCKJAW TONG	each	M6-F	2	_____
58050-S3	BRAKE BAND GUSSET F/ 5 1/2 LOCKJAW TONG	each	M6-F	2	_____

SUPERIOR MANUFACTURING

Pick List

58070 / HANGER BRACKET ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
58070	PICKLIST FOR 58070 REV DATE: 12/20/00 SEE NOTES FOR 58070	each		1	_____
1167	NYLOCK NUT 3/4"-10	each	52	2	_____
1173	HHCS 3/4"-10 X 1 3/4" GR8	each	52	2	_____
1176	HHCS 3/4"-10 X 3" GR8	each	52	2	_____
1613	3/4" BMI THREADED CAP	each	S4-G	2	_____
45001-S1	BATMAN HANDLE FOR ALL SIZES A-36 PLATE	each	M3-E	1	_____
45001-S3A	U. PAD EYE BAR	each	M3-E	2	_____
45001-S3B	U. PAD EYE TAB	each	M3-E	4	_____
58163	HANGER BRACKET UPRIGHT F/5 1/2 STD & LJ	each	(W)	2	_____

SUPERIOR MANUFACTURING

Pick List

KITBRG-03 / BEARING KIT F/CLJ5500-03 & 4

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1906	BEARING BALL 1/4"	each	39-A	1	_____
1907	BEARING 307 SZZ	each	39-A	3	_____
1908	BEARING MRC5208MZZ	each	39-A	2	_____
1937	SNAP RING INT. IRR-3000X306	each	39-B	4	_____
1945	SNAP RING EXT. X97-137	each	39-C	1	_____
1951-L	SNAP RING EXT. RS-112	each	39-C	1	_____
1955	BUSHING IR-141816	each	39-C	30	_____
1964	1"SEALED CAM FLWR.HEAVY DUTY CFH-1-SB	each	39-D	34	_____

SUPERIOR MANUFACTURING

Pick List

SLV1000-01 / N.C. SELF LUBRICATED VALVE

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1007	U BOLT 1/4"-20 X 1 "	each	M1-B	1	_____
1014	U BOLT 1/4" X 1 1/4"	each	M1-B	1	_____
2-016	O RING-5/8"ID 3/4"OD 1/16"WIDTH	each	O2-A	1	_____
40028	PROTECTOR SLEEVE F/ DOOR SWITCHES(SLV1000-01)	each	M3-B	1	_____
MA10-ACNC-04	2 WAY CAM OPERATED VALVE	each	S3-C	1	_____
SLV1002	N.C SPOOL F/ SLV1000-01	each		1	_____
SLV1003	DOOR SWITCH VALVE ROLLER F/ SLV1000	each		1	_____

SUPERIOR MANUFACTURING

Pick List

BUCS5500 / 5 1/2" LOCKJAW BACKUP

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00BUCS5500	PICKLIST F/5 1/2 LOCKJAW BU REV DATE: 04/02/01	each		1	_____
1226	JAM NUT 1 1/16"-12	each	52	2	_____
1927	SNAP RING EXT. RSN-150	each	S5-E	4	_____
45033	LOCKJAW NAME PLATE 1/4" LASER CUT	each	M3-F	2	_____
45047-S1	MEDIUM **CLINCHER®** NAME	each	M4-A	2	_____
51047-S3	MED. 5 1/2" NUMBER	each	M4-E	2	_____
72025	GARLOCK BUSH.-24DU24 PIVOT PIN BUSH.	each	S2-G	2	_____
76128-S2	DOOR SWITCH BASE PLATE	each	M10-D	1	_____
86003500	WIPER SEAL 3 1/2"	each		1	_____
BAC-3M25RCFF	GAUGE	each	S2-E	1	_____
BUC5524-A	CART.F/ SUN CHECK VALVE CKEB XBN	each	M12-C	1	_____
BUC5524-B	PILOT OPER CHECK VAVLE-BCC ALUM BODY ONLY (3000 PSI)	each	M12-C	1	_____
BUCS5501	DOOR INSERTS F/ 5 1/2 LOCKJAW BACKUP	each	M14-D	2	_____
BUCS5503	RIGHT DOOR WEDGE F/ 5 1/2 LOCKJAW BACKUP	each	M14-D	1	_____
BUCS5504	LEFT DOOR WEDGE F/ 5 1/2 LOCKJAW BACKUP	each	M14-D	1	_____
BUCS5505	BUC.TOP PL. WELDMENT F/ 5 1/2 LOCKJAW BACKUP	each		1	_____
BUCS5506	BUC.BOT. PL.WELDMENT F/ 5 1/2 LJ BACKUP	each		1	_____
BUCS5507	BUC.COVER PL.f/5 1/2 LOCKJAW	each	24-E	2	_____
BUCS5510	SPACER TUBE F/ 5 1/2 LOCKJAW BACKUP	each	M14-D	6	_____
BUCS5511	SPACER F/ 5 1/2 LOCKJAW B/U	each	M14-D	1	_____

SUPERIOR MANUFACTURING

Pick List

BUCS5500 / 5 1/2" LOCKJAW BACKUP

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
BUCS5512	GUSSET KEYSTOCK F/ 5 1/2 LOCKJAW BACKUP	each	2-B	4	_____
BUCS5513	LOAD CELL NOSE * INCLUDES P/N: BUCS5513-S1 *END CAP WELDED ON ONE END	each	M14-D	1	_____
BUCS5520	DOOR PIN F/ 5 1/2 LOCKJAW BACKUP	each	M14-E	2	_____
BUCS5522	TOP DOOR CLIPS F/ 5 1/2 LOCKJAW BACKUP	each	M14-E	2	_____
BUCS5525	BOTTOM DOOR CLIPS F/ 5 1/2 LOCKJAW BACKUP	each	M14-E	2	_____
BUCS5526	RIGHT DOOR PLATE F/ 5 1/2 LOCKJAW BACKUP	each	M14-E	2	_____
BUCS5528	HI-PSI CAM WEDGE	each	M14-F	1	_____
BUCS5529	LEFT DOOR PLATE F/ 5 1/2 LOCKJAW BACKUP	each	M14-F	2	_____
BUCS5530	BACKUP LEG F/ 5 1/2 LOCKJAW	each	M14-F	3	_____
BUCS5531	EXT.SPRING ASSOC.SPR. P/N: E1000-148-8000-M	each	M14-F	1	_____
BUCS5532	5 1/2 LJ CYLINDER ASSEMBLY 5 1/2" LJ BACKUP - PICKLIST	each		1	_____
BUCS5535	BACKING PLATE SPACER F/ 5 1/2 LOCKJAW BACKUP	each	2-D	4	_____
BUCS5536	DOOR SPACER F/ 5 1/2" LOCKJAW BACKUP	each	M14-F	4	_____
BUCS5540	3/8" FNPT BULKHEAD COLLAR	each	M14-F	2	_____
BUCS5541	1/4" x 3/8" FNPT BULKHEAD COLLAR	each	M14-F	1	_____
BUCS5575	DOOR ROLLER	each	M15-A	2	_____
BUCS5576	DOOR ROLLER PIN	each	M15-A	2	_____
BUCS5577	DOOR PIN SPACER	each	M15-A	2	_____
CLEBU9602S10	ZERT PROTECTOR	each	M16-D	4	_____

SUPERIOR MANUFACTURING

Pick List

BUCS5500 / 5 1/2" LOCKJAW BACKUP

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
CM4565	LHA 1/4-NPT-CHECK VALVE CV02P5	each	M17-E	2	_____
CM7654	PSI REDUCING VALVE (SUN) F/ CHROMEMASTERS YPDA-KAN-BB	each	M18-C	1	_____
D3500	ROD WIPER 3 1/2"ID 4"OD 3/8"HGT. 1/4"BASE THK.	each		1	_____
HA-10	HOSE 1/4" X 10" MNPT X FJIC	each		1	_____
HA-8	HOSE 3/8" X 12" MNPT X FJIC	each		1	_____
HA-9	HOSE 1/4" X 13" FJIC X FJIC	each		1	_____
KITBOLT-19	BOLT KIT F/BUCS5500 5 1/2" LOCKJAW BACKUP	each		1	_____
KITFIT-19	FITTING KIT F/BUCS5500 5 1/2" LOCKJAW BACKUP	each		1	_____
SLV1000-04	N.C. ORIG.SPOOL VALVE W/VENT NORMALLY CLOSED PICKLIST	each	S3-C	1	_____

SUPERIOR MANUFACTURING

Pick List

BUCS5500-01 / 5 1/2" LOCKJAW BACKUP

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00BUCS550010	PICKLIST F/5 1/2 LJ W/HASKEL REV DATE: 07/24/01 SEE NOTES F/BUCS5500-10	each		1	_____
100	NUT 1/4"-20 GR.8	each	55	4	_____
101	LOCKWASHER 1/4" GR8	each	55	4	_____
102	FLATWASHER 1/4" GR8	each	54	4	_____
105	HHCS 1/4"-20 X 1" GR8	each	55	4	_____
BAC-5M25RCFF	GAUGE	each	S2-E	1	_____
BUCS5500	5 1/2" LOCKJAW BACKUP PICKLIST	each		1	_____
BULJ4035	M-36 HASKEL PUMP	each	M15-F	1	_____
BULJ4036	RELIEF VALVE SS-4R3A5	each	M15-F	1	_____
BULJ4037	WHITE SPRING KIT 177-R3A-K1-F	each	M15-F	1	_____

16-May-01
2:34 PM

SUPERIOR MANUFACTURING

Pick List

BUCS5505 / BUC.TOP PL. WELDMENT

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
BUCS5505-S1	GAUGE PROTECTOR F 5 1/2 LOCKJAW BACKUP	each	24-C/WELD	1	_____
BUCS5505-S2	DONUT STIFFENERS	each	24-C/WELD	2	_____
BUCS5505-S3	ROLLER ZERT ACCESS	each	24-C/WELD	2	_____
BUCS5505-S4	BACKUP TOP PLATE	each		1	_____
CLEBU9602S10	ZERT PROTECTOR	each	25-D WELD	2	_____

16-May-01
2:36 PM

SUPERIOR MANUFACTURING

Pick List

BUCS5506 / BUC.BOT. PL. WELDMENT

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
BUCS5505-S1	GAUGE PROTECTOR F 5 1/2 LOCKJAW BACKUP	each	24-C/WELD	1	_____
BUCS5505-S2	DONUT STIFFENERS	each	24-C/WELD	2	_____
BUCS5505-S3	ROLLER ZERT ACCESS	each	24-C/WELD	2	_____
BUCS5505-S4	BACKUP TOP PLATE	each		1	_____
CLEBU9602S10	ZERT PROTECTOR	each	25-D WELD	2	_____

SUPERIOR MANUFACTURING

Pick List

BUCS5532 / 5 1/2 LJ CYLINDER ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00BUCS5532	PICKLIST FOR CYLINDER ASSY REV DATE: 04/02/01 SEE NOTES F/BUCS5532	each		1	_____
1008-B	SET SCREW 1/4"-20 X 1/4"	each		1	_____
1020	SHCS 1/4"-20 X 4 1/4"	each		2	_____
1154	SHCS 5/8"-11 X 1 3/4"	each		4	_____
215	SHCS 1/4"-20 X 3/4"	each		3	_____
ASAP2184	SEAL KIT F/ 5 1/2 LJ CYL. PICK LIST	each		1	_____
BUCS5515	TOP RETAINER F/ 5 1/2 LOCKJAW BACKUP	each	2-B	1	_____
BUCS5516	BOTTOM RETAINER F/ 5 1/2 LOCKJAW BACKUP	each	2-B	1	_____
BUCS5517	PISTON F/ 5 1/2 LOCKJAW B/U	each	2-C	1	_____
BUCS5523	CYLINDER BARREL- 5 1/2 LJ BU	each	2-C	1	_____
BUCS5524	GLAND F/ 5 1/2 LOCKJAW B/U	each	2-C	1	_____
BUCS5527	BACKING PLATE/ROD WELDMENT F/ 5 1/2 LJ BACKUP PICKLIST REQ.	each	2-D	1	_____

16-May-01
2:45 PM

SUPERIOR MANUFACTURING

Pick List

ASAP2184 / SEAL KIT F/ 5 1/2 LJ CYL.

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
25004500	POLYPACK 1/4" CROSS SECTION 4 1/2 X 5 X 1/4	each		1	_____
37503500	POLYPACK 3/8" CROSS SECTION 3 1/2 X 4 1/4 X 3/8	each		1	_____
37504250	POLYPACK 3/8" CROSS SECTION 4 1/4 X 5 X 3/8	each		2	_____
86003500	WIPER SEAL 3 1/2"	each		1	_____
U12501875	POLYPACK FOR ASAP KITS	each		1	_____
W37500500	WEAR BAND W2-3750-0500	each		1	_____

16-May-01
3:01 PM

SUPERIOR MANUFACTURING

Pick List

SLV1000-04 / N.C. ORIG.SPOOL VALVE W/VENT

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1579-B	VENT 1/8"NPT HUBER P/N MV001A	each	38-A	1	_____
40028	PROTECTOR SLEEVE F/ DOOR SWITCHES(SLV1000-01)	each	3-B	1	_____
MA10-ACNC-04	2 WAY CAM OPERATED VALVE	each	35-B	1	_____

SUPERIOR MANUFACTURING

Pick List

KITBOLT-19 / BOLT KIT F/BUCS5500

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00KITBOLT19	PICKLIST FOR KITBOLT-19 REV DATE: 07/24/01	each		1	_____
1001	ZERT 1/8" NPT	each	BIN-50	8	_____
1008-B	SET SCREW 1/4"-20 X 1/4"	each	50	1	_____
1020	SHCS 1/4"-20 X 4 1/4"	each	50	2	_____
1021	SHCS 1/4"-20 X 4 1/2"	each	50	2	_____
1023	SHCS 1/4"-20 X 4 3/4"	each	50	4	_____
1025	FLATWASHER 3/8" GR8	each	50	2	_____
1027	LOCKWASHER 3/8" GR8 (134)	each	50	14	_____
1040-A	SHCS 3/8"-16 X 3/4"	each	50	4	_____
1047	HHCS 3/8"-16 X 1" GR8	each	50	12	_____
1050	HHCS 3/8"-16 X 2" GR8	each	50	2	_____
1055	HHCS 3/8"-16 X 2 1/4" GR8	each	50	2	_____
1070	HHCS 3/8"-16 X 3" GR8	each	51	2	_____
1103	LOCKWASHER 1/2" GR8	each	51	19	_____
1109	SHCS 1/2"-13 X 8 1/2"	each	51	1	_____
1110	HHCS 1/2"-13 X 1" GR8	each	51	1	_____
1112	HHCS 1/2"-13 X 1 1/2" GR8	each	51	12	_____
1115	SHCS 1/2"-13 X 5 1/2" GR8	each	51	6	_____
1116	HHCS 1/2"-13 X 6 1/2" GR8	each	51	1	_____
1150-A	BRASS NUT 6-32"	each	51	3	_____
1150-B	BOLT BRASS 6-32" X 3/4"	each	51	3	_____
1151	5/8" LOCKWASHER GRADE 8	each	51	11	_____
1154	SHCS 5/8"-11 X 1 3/4"	each	51	4	_____
1161-C	HHCS 5/8"-11 X 7 1/2" GR8	each	51	11	_____
137	HHCS 3/8"-16 X 3/4" GR8	each	55	12	_____
142	HHCS 3/8"-16 X 2" GR8	each	57	2	_____

SUPERIOR MANUFACTURING

Pick List

KITBOLT-19 / BOLT KIT F/BUCS5500

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
165	NUT 1/2"-13 GR8	each	55	6	_____
194	NUT 5/8"-11 GR8	each	57	11	_____
214	SHCS 1/4"-20 X 1/2"	each	56	2	_____
215	SHCS 1/4"-20 X 3/4"	each	56	3	_____
218	SHCS 1/4"-20 X 1 1/2"	each	56	4	_____
227	SHCS 5/16"-18 X 1 1/4"	each	56	4	_____

SUPERIOR MANUFACTURING

Pick List

KITFIT-19 / FITTING KIT F/BUCS5500

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00KITFIT19	PICKLIST FOR KITFIT-19 REV DATE: 04/02/01	each		1	_____
1449	STREET EL 1/4"	each	S4-A	4	_____
1450	STREET EL 3/8"	each	S4-A	6	_____
1456	HEX NIPPLE 1/4"	each	S4-A	3	_____
1457	HEX NIPPLE 3/8"	each	S4-A	1	_____
1471-L	BRANCH TEE 1/4" MALE	each	S4-B	2	_____
1474	45 1/4"MNPT X 1/4"MJIC	each	S4-B	2	_____
1486	REDUCER BUSHING 3/8" X 1/4"	each	S4-B	1	_____
1490	REDUCER BUSHING 1/2" X 1/4"	each	S4-C	1	_____
1491	REDUCER BUSHING 1/2" X 3/8"	each	S4-C	1	_____
1498	90 SWVL 1/4"MJIC X FJIC	each	S4-C	1	_____
1562	ADAPTER 1/4"MNPT X 1/4"MJIC STRAIGHT	each	S4-C	5	_____
1569	90 1/4"FNPT X 1/4"FNPT	each	S4-D	1	_____
1570	ADAPTER 3/8"MNPT X 3/8"MJIC STRAIGHT	each	S4-D	1	_____
1574	90 1/4"MJIC X 3/8"MNPT	each	S4-D	1	_____
1575	90 1/4"MNPT X 1/4"TUBE	each	S4-D	2	_____
1576	90 1/4"MNPT X 1/4"MJIC	each	S4-D	6	_____
1577-A	90 3/8"MNPT X MJIC FORGED	each	S4-D	2	_____
1594	RUN TEE 1/4"	each	S4-F	1	_____
1599	TEE 3/8" FEMALE	each	S4-F	1	_____
1611	FLUSH PLUG 1" MNPT	each	S4-G	2	_____
1649	1/2" MJIC X 3/8" MNPT-90	each	S5-A	2	_____

16-May-01
3:40 PM

SUPERIOR MANUFACTURING

Pick List

BUCS5560 / MOUNTING KIT & VP 5 1/2 LJ

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00BUCS5560	PICKLIST FOR BUCS5560 F/CLJ5500-03 & 04 REV DATE: 11/17/00	each		1	_____
1075	HHCS 3/8"-16 X 4 1/2" GR8	each		3	_____
134	LOCKWASHER 3/8" GR8	each	1027	3	_____
BUCS5508-S3	VALVE PLATFORM LEG F/ 5 1/2 LOCKJAW BACKUP	each		3	_____
BUCS5509	5 1/2 LOCKJAW HANGER ASSY. F/CLJ5500-03 PICKLIST	each		1	_____
BUCS5570	LEG ASSEMBLY 5 1/2 LOCKJAW W/GUARD CYL. F/CLJ5500-03 & 04 PICKLIST	each		2	_____
VP5800	VALVE PACKAGE 5 1/2 LJ & STD PICK LIST	each		1	_____

16-May-01
3:48 PM

SUPERIOR MANUFACTURING

Pick List

BUCS5509 / 5 1/2 LOCKJAW HANGER ASSY.

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00BUCS5509	PICKLIST FOR BUCS5509 F/CLJ5500-03 REV DATE: 11/17/00	each		1	_____
BUC4509	HALO (LOAD CELL BRACKET)	each	31-A	1	_____
BUC4511	H-PLATE SPRING 1/4 WIRE	each	5-E	1	_____
BUC4512	H-PLATE ASSEMBLY PICK LIST	each	5-E	2	_____
BUCS5508	5 1/2"LOCKJAW HANGER WELD. F/CLJ5500-01 PICK LIST	each		1	_____

SUPERIOR MANUFACTURING

Pick List

BUCS5570 / LEG ASSEMBLY 5 1/2 LOCKJAW

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00BUCS5570	PICKLIST FOR BUCS5570 F/CLJ5500-03 & 04 REV DATE: 06/26/00	each		1	_____
165	NUT 1/2"-13 GR8	each	1101	2	_____
166	LOCKWASHER 1/2" GR8	each	1103	2	_____
58030	TONG LEG F/ 5 1/2 LOCKJAW 5 1/2 LOCKJAW TONG	each	18-E	2	_____
BUC4515	LEG SPRING 4" OD X 7 1/2" lg 3/8" wire 119 lbs/in 7 turns, sqd & grnd ends	each	5-E	2	_____
BUC4516-P	SPRING RETAINER PIN	each	23-B	2	_____
BUCS5571	TOP SPRING CAP WELDMENT F/5 1/2" LJ BACKUP PICKLIST	each	2-E	2	_____
BUCS5572-01	BOTTOM SPRING CAP WELDM. F/5 1/2 LOCKJAW BACKUP	each	2-E	2	_____
X2-94	HHCS 1/2"-13 X 4" GR8	each		2	_____

SUPERIOR MANUFACTURING

Pick List

VP5800 / VALVE PACKAGE 5 1/2 LJ & STD

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00VP5800	PICKLIST FOR VP5800 REV DATE: 09/04/01	each		1	_____
1027	LOCKWASHER 3/8" GR8 (134)	each	50	2	_____
1072	HHCS 3/8"-16 X 3 3/4" GR8	each	51	2	_____
1371	PIPE NIPPLE 3/4" X CLOSE SCH.80	each	S3-C	2	_____
1372	3/4" UNION 3000#	each	S3-C	2	_____
1400-A	PIPE NIPPLE 1/2" X 3" SCH.80	each	S3-E	2	_____
1401	PIPE NIPPLE 3/4" X 3" SCH.80	each	S3-E	2	_____
1403	PIPE NIPPLE 1/2" X 7 1/4" SCH.80	each	S3-E	1	_____
1404-A	PIPE NIPPLE 3/4" X 7" SCH.80	each	S3-E	2	_____
1405-A	PIPE NIPPLE 3/4" X 4 1/2" SCH.80	each	S3-E	1	_____
1406	PIPE NIPPLE 3/4" X 5" SCH.80	each	S3-E	1	_____
1418	PIPE NIPPLE 1" X 3" SCH.80	each	S3-F	2	_____
1421	PIPE NIPPLE 1" X 10" SCH.80	each	S3-F	1	_____
1431	QUICK DISCONNECT 1/2" MALE SNAPTITE (VHN8-8F)	each	S3-G	1	_____
1441	QUICK DISC.1"MALE-WING TYPE	each	S3-G	1	_____
1442	1" Q.D. CAP-78DC-16	each	S4-A	1	_____
1443	1 1/4" Q. D. CAP-78DC-20	each	S4-A	1	_____
1446	QUICK DISCONNECT 1 1/4" M WING TYPE	each	S4-A	1	_____
1451	STREET EL 1/2" FORGED	each	S4-A	1	_____
1452	STREET EL 3/4"	each	S4-A	2	_____

SUPERIOR MANUFACTURING

Pick List

VP5800 / VALVE PACKAGE 5 1/2 LJ & STD

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1459	90 1/2" FNPT X FNPT	each	S4-B	1	_____
1460	HEX NIPPLE 1/2"	each	S4-B	1	_____
1461	HEX NIPPLE 3/4"	each	S4-B	5	_____
1492	REDUCER BUSHING 1" X 3/4"	each	S4-C	2	_____
1495	REDUCER BUSHING 3/4" X 1/2"	each	S4-C	3	_____
1499	REDUCER BUSHING 1 1/4" X 1"	each	S4-C	1	_____
1576	90 1/4"MNPT X 1/4"MJIC	each	S4-D	2	_____
1586	90 SWVL 3/4"FNPT X FNPT PARKER FORGED	each	S4-E	2	_____
1588	90 3/4" FNPT X 3/4" FNPT	each	S4-E	3	_____
1591	90 1" FNPT X FNPT	each	S4-E	1	_____
1603	45 1" MNPT X 1" MNPT	each	S4-F	1	_____
1611	FLUSH PLUG 1" MNPT	each	S4-G	2	_____
1616	RUN TEE 1"	each	S4-G	1	_____
1625	90 1/2" FNPT X MJIC	each	S4-G	2	_____
1627	RUN TEE 3/4"	each	S4-G	1	_____
1655	45 1 1/4" MNPT X FNPT	each	S5-B	1	_____
20006	1" FNPT X FNPT 90 W/ 1/4" HALF COLLAR WELDED	each	M2-B	1	_____
4 BANK	391-1873-048 (4 BANK KIT) F/ VAL SEC. DVA20-SK-4	each	54	1	_____
55201	CONTROL VALVE ASSEMBLY MODIFIED VA20-WDA3 PICKLIST	each		1	_____
58058	DUMP VALVE 3/4" - DENISON R4V06-5A9-10A1 W/O SEL. VENT VALVE	each	M7-A	1	_____
58099	HIGH PRESSURE CHECK VALVE 1" CVH145-1000N DMIC	each	M7-C	1	_____

SUPERIOR MANUFACTURING

Pick List

VP5800 / VALVE PACKAGE 5 1/2 LJ & STD

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
A20-V1526K-8	HANDLE A/20 8" 341 9100 002	each	S11-D	3	_____
VA20-AA440	INLET W/O RELIEF VALVE	each	S11-C	1	_____
VA20-DA3	WORK SECTION	each	S11-C	1	_____
VA20-MA3	WORK SECTION	each	S11-C	1	_____
VA20-MRV-1	RELIEF CARTRIDGE	each	S11-B	1	_____
VA20-SA3	WORK SECTION	each	S11-D	1	_____
VA20-TR44	OUTLET	each	S11-D	1	_____

ACCESSORIES AND OPTIONS

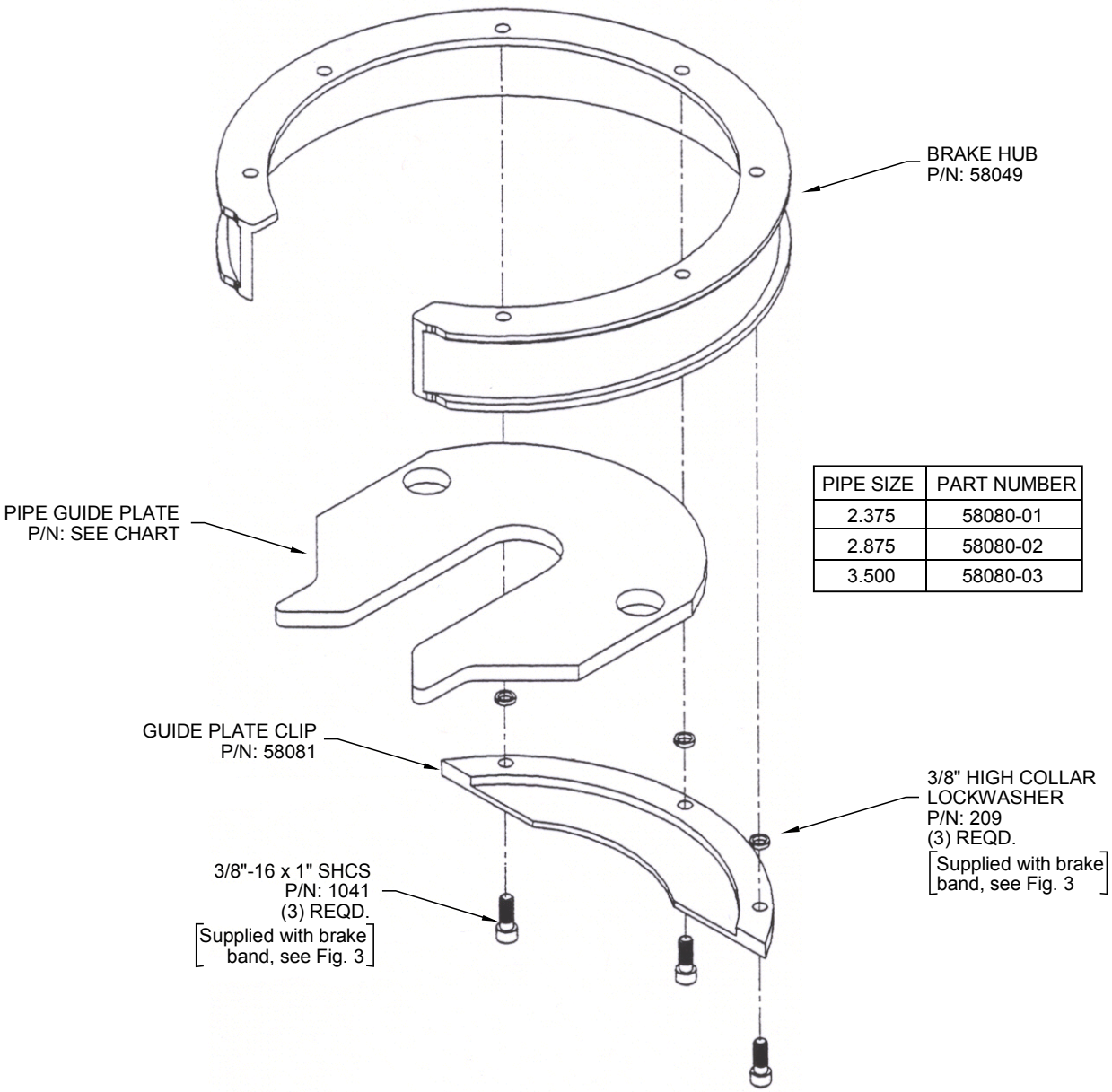
Several different accessory items are available for the **CLINCHER® LOCKJAW™** Tong and Backup to allow them to be customized to provide a system most appropriate for the inducer's application.

CLJ5500 LOCKJAW™ Tong Accessories

Compression Load Cell and Torque Gauge	directly measures applied torque
Tension Load Cell and Torque Gauge	directly measures applied torque
Tong Handles with closed covers	protects operators hands
Rear Jaw Spring packages for fiberglass tubulars	guards against damaged tubulars
Solenoid Operated Module for Dump Valve	allows computer to limit torque applied
Adapter for Turns Proximity Switch	allows computer to sense rotation
3 Point Lifting Bridle	alternative lifting system
Lift Cylinder with Integral Spring Hanger	controls vertical position
Hydraulic Brake System with Unloading Valve	increases tong efficiency at high torques
TSP-80 Tong Speed Control	allows slow speed rotation with full torque
Aluminum Guide Plate	prevents tubing from contacting tong during installation and removal
2 Speed Motors	
Alternate Motor Displacements	

BUCS5500 LOCKJAW™ Backup Accessories

Backup Handles	simplifies manipulation
UMW Plastic Bumper	prevents tubing from contacting backup body during installation
Hydraulic Pressure Intensifiers	boosts backup pressure when using low pressure power units (air and hydraulically driven systems are available)
Shipping Skids and Cages	simplify handling, transport and help guard against damage



PIPE SIZE	PART NUMBER
2.375	58080-01
2.875	58080-02
3.500	58080-03

OPTIONAL ALUMINUM GUIDE PLATE

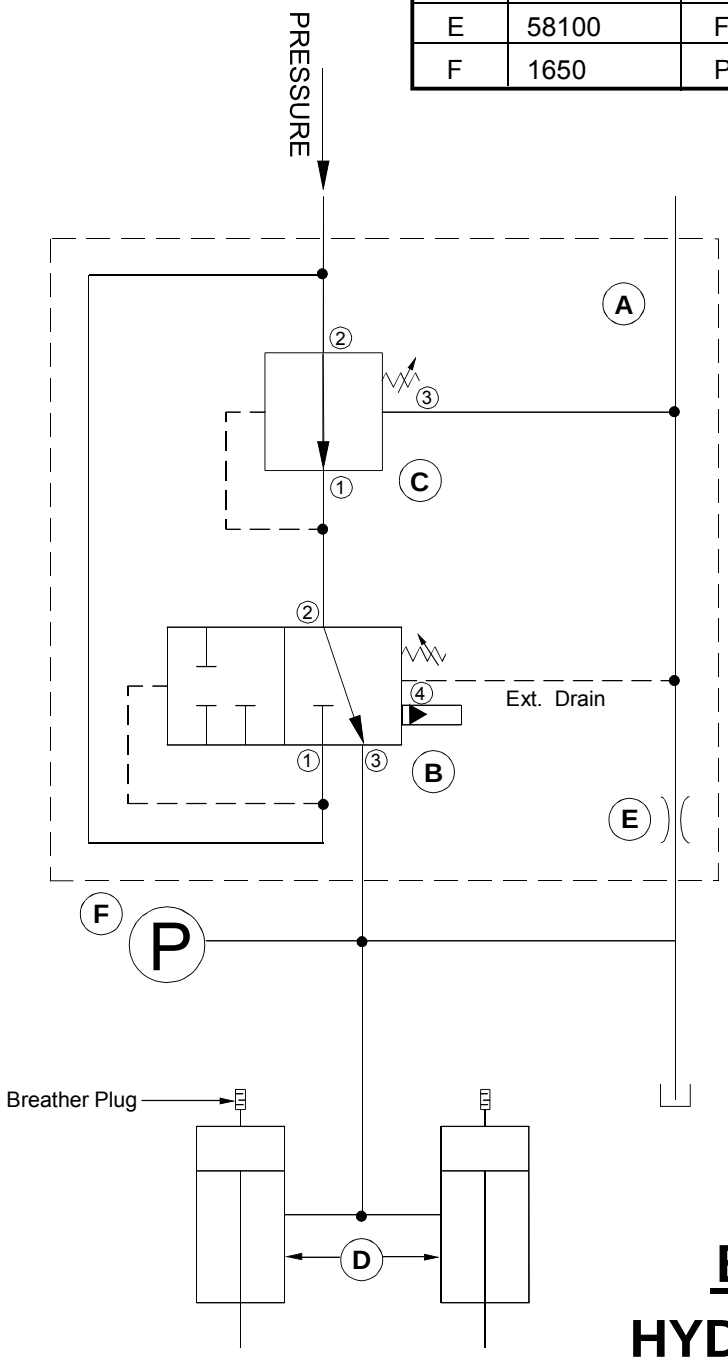
ACCESSORIES AND OPTIONS

Optional Hydraulically Operated Cage Plate Brake System

This system replaces the springs used to energize the cage plate brake band. When the tong motor is activated hydraulic pressure is directed through a pressure reducing valve (ref. Item B, Drawing Number ILL1080) set at 250 to 300 psi. This low pressure fluid is then directed through a directional control valve (ref. Item A) system and on to a pair of hydraulic cylinders (ref. Item C) connected to the brake band. This pressure creates the brake band resistance required to cause the relative rotation between the cage plate assembly and the ring gear required to activate the jaws. At high torques when the motor pressure exceeds approximately 2000 psi the directional control valve shifts to shut off hydraulic fluid into the brake cylinder. Pressure contained within the cylinders is allowed to bleed off through a fixed orifice (ref. Item D) to a level equivalent to system back pressure. Relieving this pressure reduces brake friction at a time when it is not required because the jaws have already been actuated, thus increasing overall tong efficiency.

If brake performance appears to be less than required, pressure can be increased by adjusting the regulator stem on the pressure reducing valve (ref. Item B). We do not recommend that brake system pressure be allowed to exceed 500 psi as shown on pressure gauge (ref. Item E) attached to the directional control valve.

ITEM	PART NO.	DESCRIPTION
A	58090	CUSTOM MANIFOLD, C-22102
B	58090-S1	CARTRIDGE, DPBMLBN
C	58090-S2	CARTRIDGE, 1PA10-F3-10SV
D	72032	BRAKE CYLINDERS (2 required)
E	58100	FIXED ORIFICE
F	1650	PRESSURE GAUGE (0-3000 PSI)



BRAKE CYLINDER HYDRAULIC SCHEMATIC

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
2		01/05/01

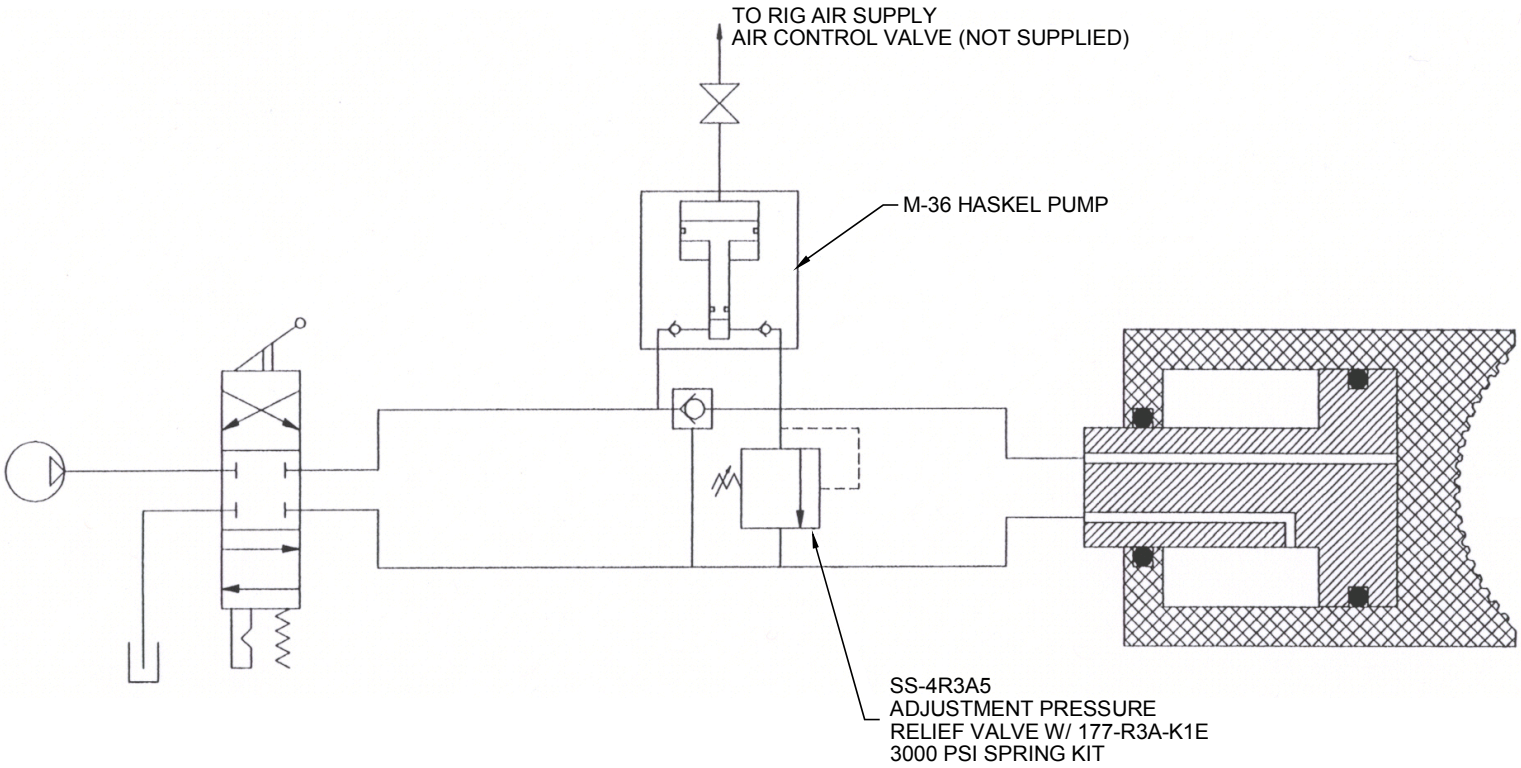
REF: S:\Equip Manuals\Dwgs\ILL1080 rev2.wpg

ACCESSORIES AND OPTIONS

Hydraulic Intensifiers for LOCKJAW™ Backup

The BUCS5500 **LOCKJAW™** Backup requires 3,000 psi hydraulic pressure to develop maximum torque. An optional hydraulic pressure intensifier is available which will allow low pressure power units to be used to drive this backup. Two different types of intensifiers are available. The first is a pneumatically driven HASKEL pump. The other is a hydraulically operated intensifier. Both pumps are connected to the hydraulic circuit in the backup, and when activated, will boost the hydraulic pressure in the backup cylinder to 3,000 psi. A preset pressure relief valve is integrated into this system to prevent over pressurization.

The HASKEL system requires a hose connecting the backup to rig air supply capable of delivering a maximum of 125 psi. To use this intensifier, close the backup on the pipe by pushing the directional control valve lever away from the operator. While holding the valve in the shifted position, open the air supply valve (not supplied as part of the backup) until the backup pressure builds to 3,000 psi as read on the backup gauge. See the HASKEL Operating Manual for additional information concerning this system.



OPTIONAL AIR OPERATED HYDRAULIC PRESSURE INTENSIFIER

SECTION 8 HASKEL PUMP INFORMATION

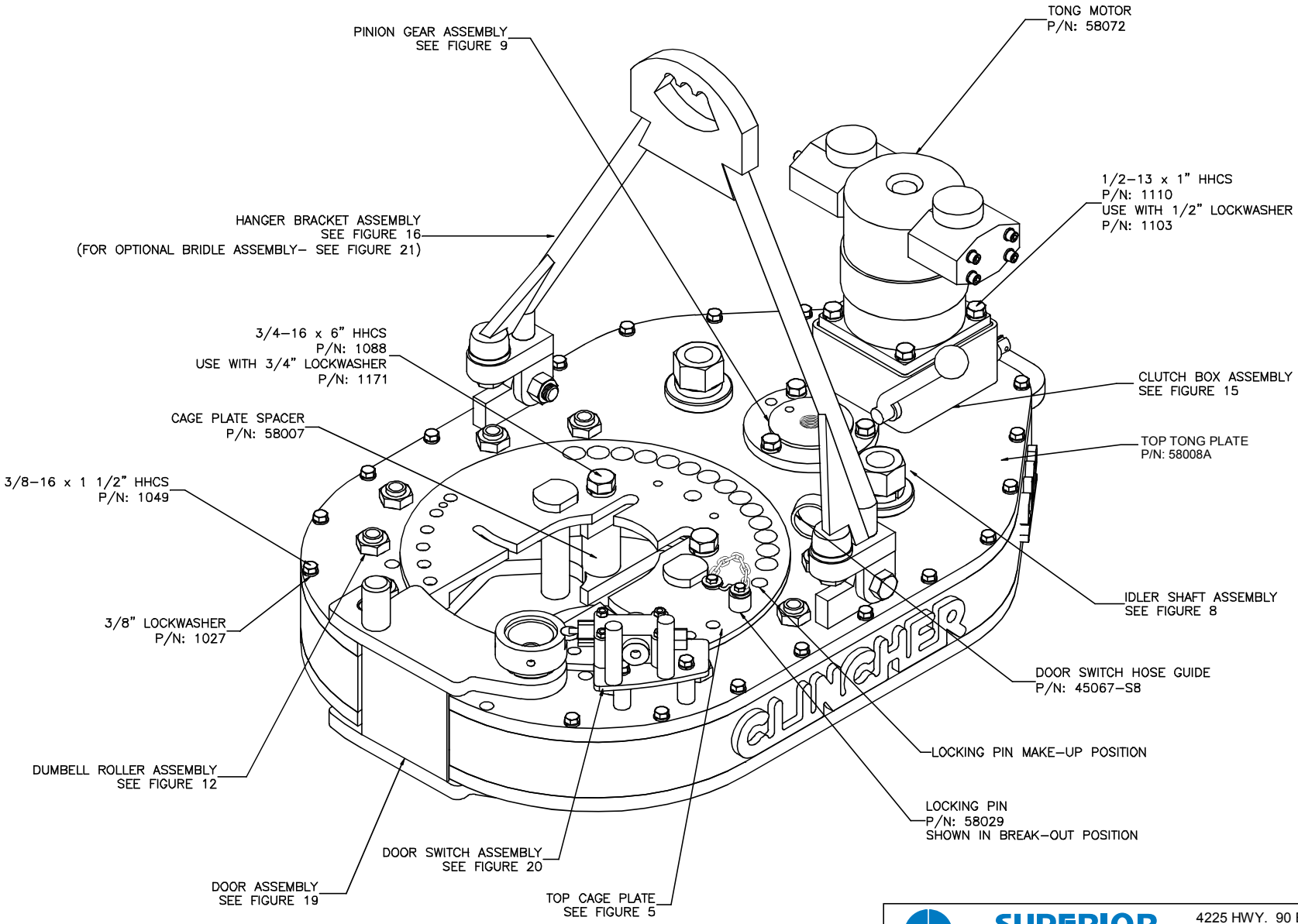
To request copy of Haskel Pump Maintenance Manual & Relief Valve Information, please contact:

Superior Manufacturing & Hydraulics
4225 Hwy. 90 East
Broussard, LA 70518
Phone: 337-837-8847
Fax: 337-837-8839
www.superior-manf.com

TABLE OF CONTENTS

SECTION 9 LOCKJAW™ TONG ILLUSTRATIONS

TOP PLATE ASSEMBLY ..... 9 - 3
GEAR TRAIN ASSEMBLY ..... 9 - 4
SPRING BRAKE ASSEMBLY (BOTTOM VIEW)..... 9 - 5
OPTIONAL CYLINDER BRAKE ASSEMBLY (BOTTOM VIEW)..... 9 - 6
FIGURE 1 / SPRING BRAKE ARM ASSEMBLY (STANDARD) ..... 9 - 7
FIGURE 2 / SPRING BRAKE ASSEMBLY ..... 9 - 8
FIGURE 3 / BRAKE BAND ASSEMBLY ..... 9 - 9
FIGURE 4 / BRAKE LINKAGE GUARD ASSEMBLY ..... 9 - 10
FIGURE 5 / TOP CAGE PLATE ASSEMBLY ..... 9 - 11
FIGURE 6 / BOTTOM CAGE PLATE ASSEMBLY..... 9 - 12
MOTOR ASSEMBLY ..... 9 - 12.1
FIGURE 7 / MOTOR GEAR ASSEMBLY ..... 9 - 13
FIGURE 8 / IDLER GEAR ASSEMBLY ..... 9 - 14
FIGURE 9 / PINION GEAR ASSEMBLY ..... 9 - 15
FIGURE 9B / PINION GEAR ASSEMBLY WITH ENCODER ..... 9 - 16
FIGURE 10 / RIGHT DOOR ASSEMBLY ..... 9 - 17
FIGURE 11 / LEFT DOOR ASSEMBLY ..... 9 - 18
FIGURE 12 / DUMBELL ROLLER ASSEMBLY ..... 9 - 19
FIGURE 14 / REAR JAW ASSEMBLY ..... 9 - 20
FIGURE 15 / CLUTCH BOX ASSEMBLY *(1ST GENERATION)* ..... 9 - 21
FIGURE 15B / CLUTCH BOX ASSEMBLY *(2ND GENERATION)*..... 9 - 21.1
FIGURE 16 / HANGER BRACKET ASSEMBLY ..... 9 - 22
FIGURE 17 / CYLINDER MOUNT ASSEMBLY ..... 9 - 23
FIGURE 18 / LEFT & RIGHT HYDRAULIC BRAKE ARM ASSEMBLY..... 9 - 24
FIGURE 19 / DOOR ASSEMBLY *(FOR PRODUCTIONS BEFORE 11/2000)*..... 9 - 25
FIGURE 19B / DOOR ASSEMBLY *(FOR PRODUCTIONS AFTER 11/2000)*..... 9 - 25.1
FIGURE 20 / DOOR SWITCH ASSEMBLY ..... 9 - 26
BRIDLE ASSEMBLY 2ND GENERATION *(Assembly No. 55001-01)* ..... 9 - 26.1
FIGURE 21 / BRIDLE ASSEMBLY ..... 9 - 27
FIGURE 22 / RING GEAR ASSEMBLY ..... 9 - 28
FIGURE 23 / SIDE HANDLE ASSEMBLY ..... 9 - 29



TOP PLATE ASSEMBLY

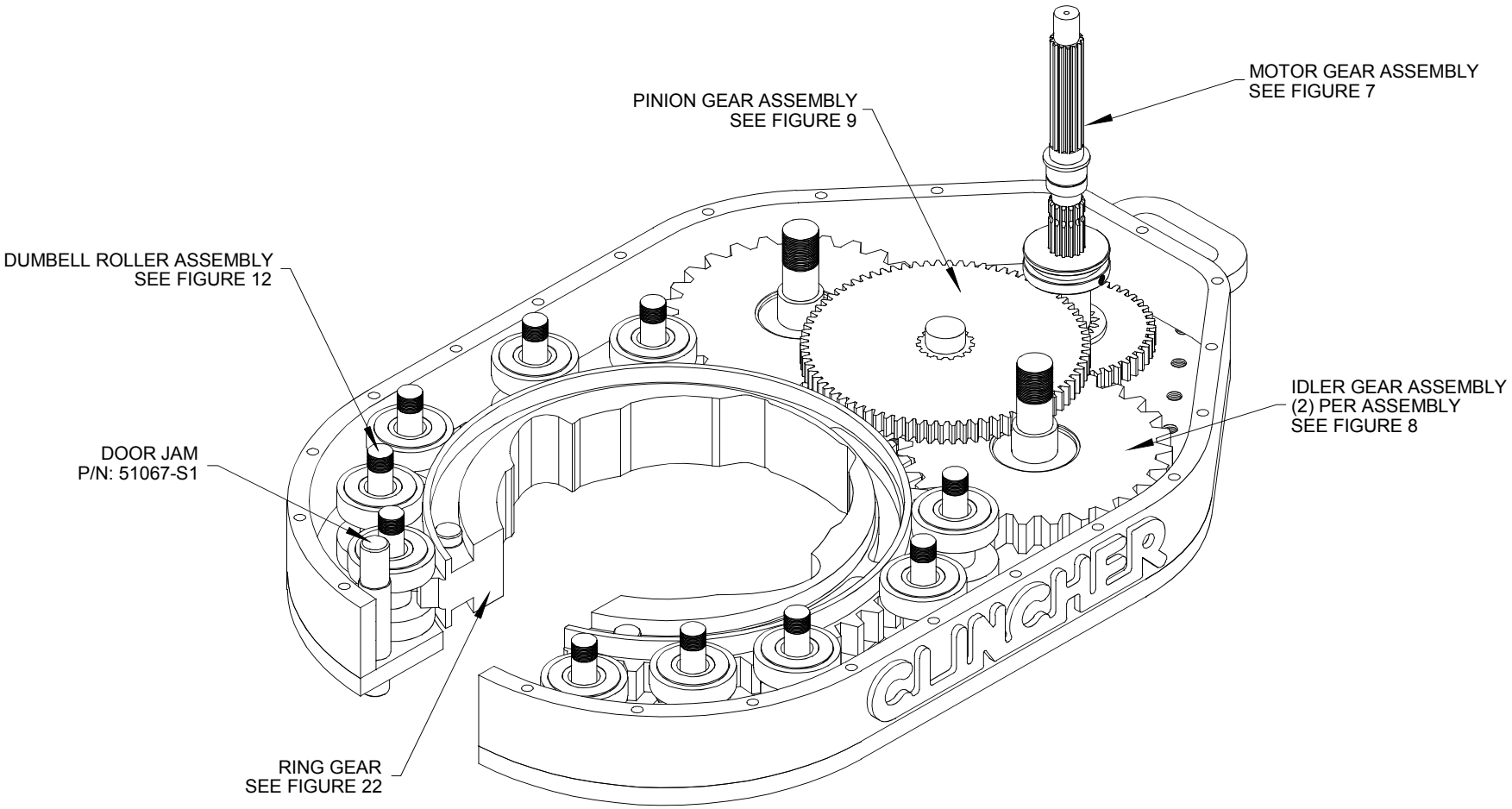
(Shown Without Jaws)

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

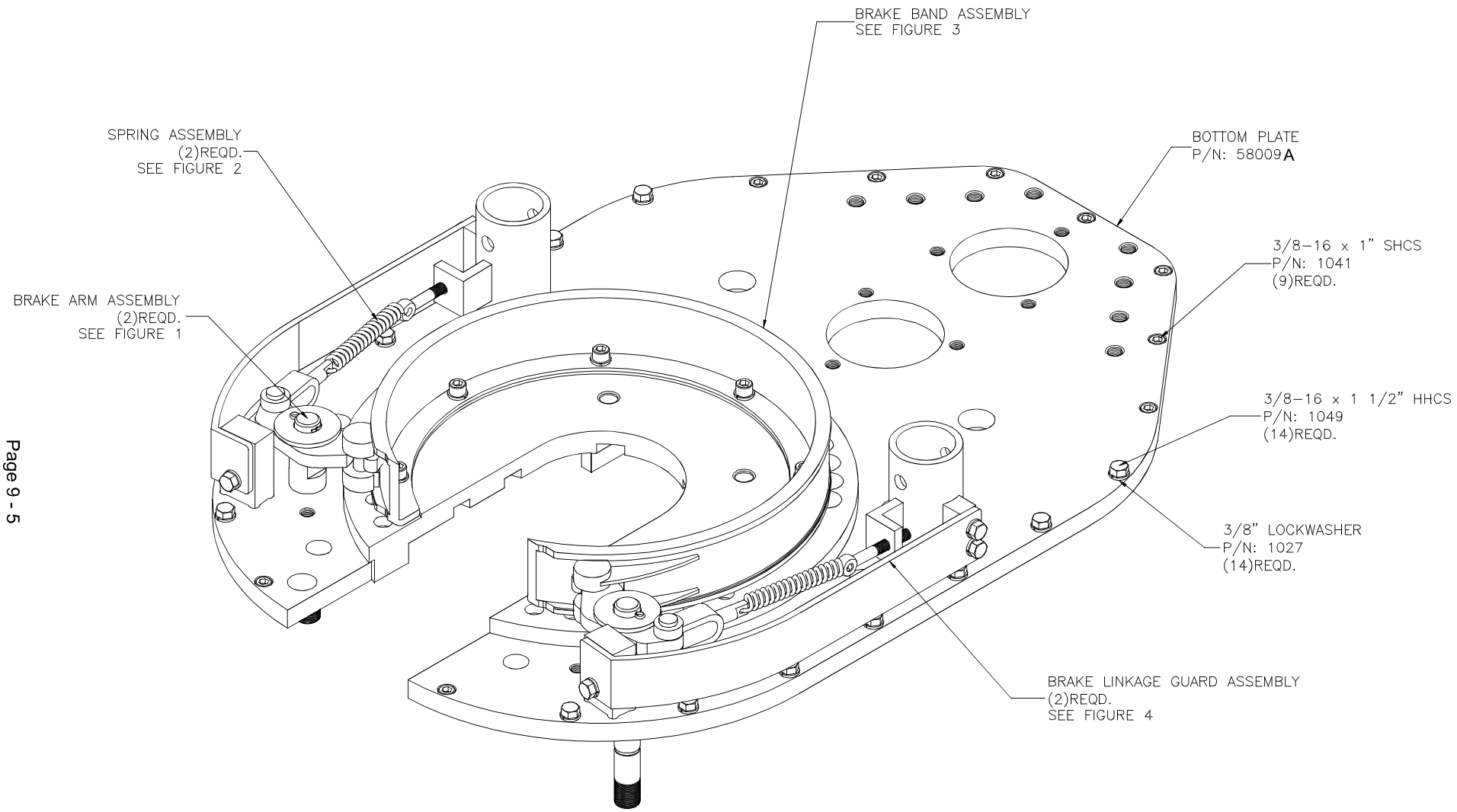
THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1	99-12-012	12/15/99

REF: S:\Equip Manuals-Dwgs\CLJ5500\Top Assy rev1.wpg



GEAR TRAIN ASSEMBLY



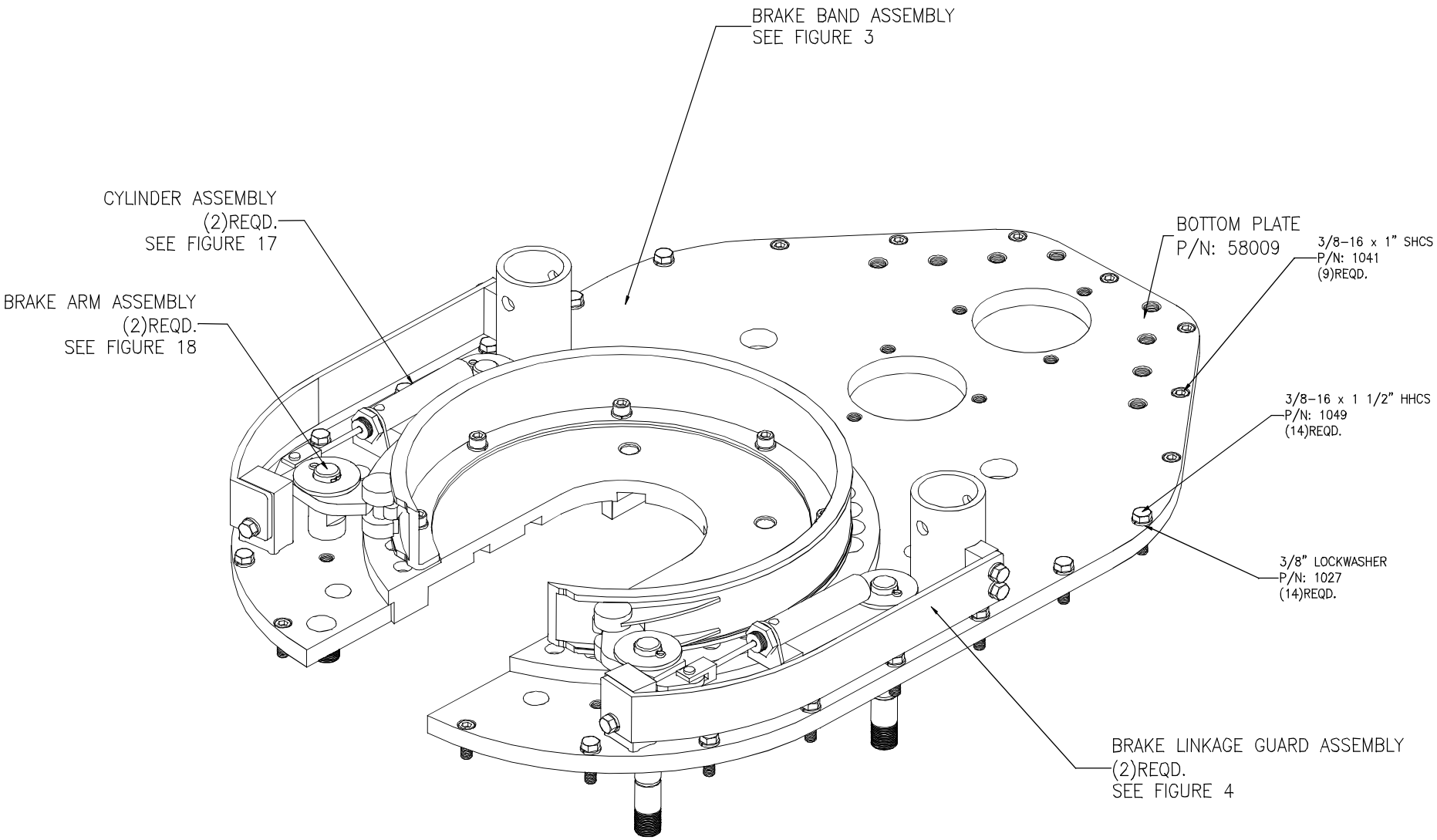
SPRING BRAKE ASSEMBLY
BOTTOM VIEW

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1		04/26/02

REF: S:\Equip Manuals-Dwgs\CLJ5500\Spring Brake rev1.wpg



OPTIONAL CYLINDER BRAKE ASSEMBLY

BOTTOM VIEW

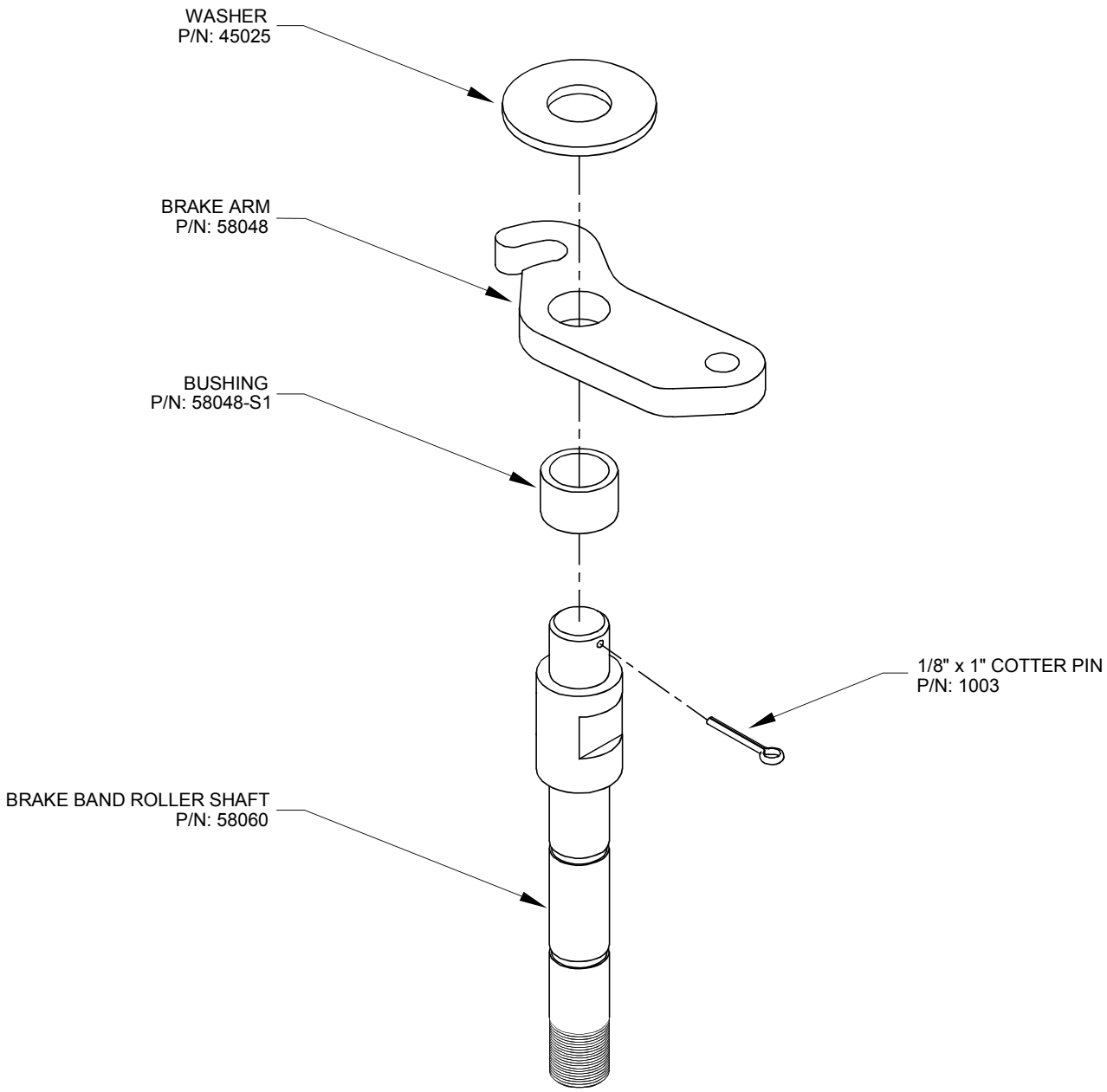


FIGURE 1

SPRING BRAKE ARM ASSEMBLY (STANDARD)

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1	99-12-031	12/23/99

REF: S:\Equip Manuals-Dwgs\CLJ5500\Brake Arm-Spring rev1.wpg

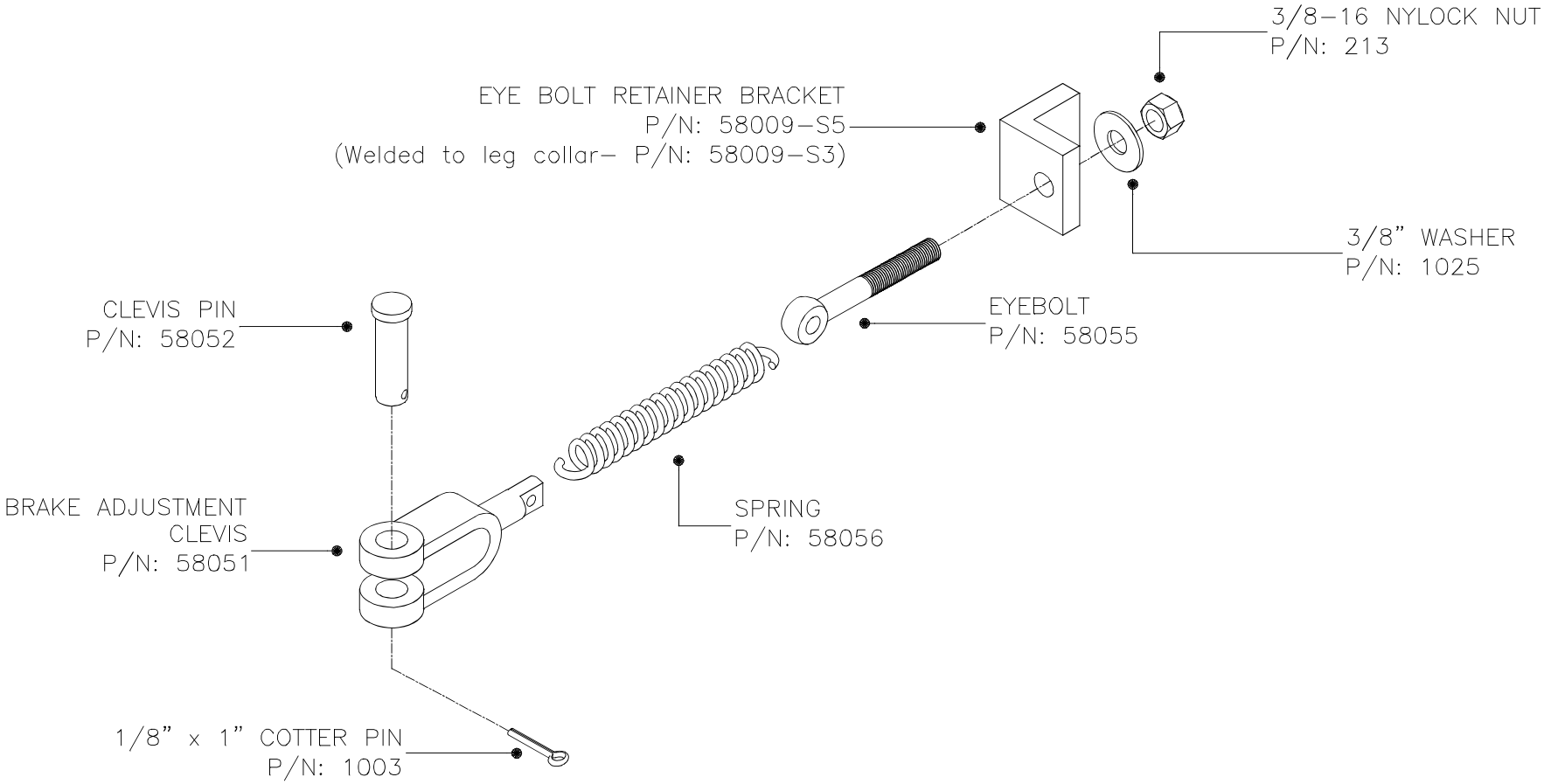


FIGURE 2

SPRING BRAKE ASSEMBLY

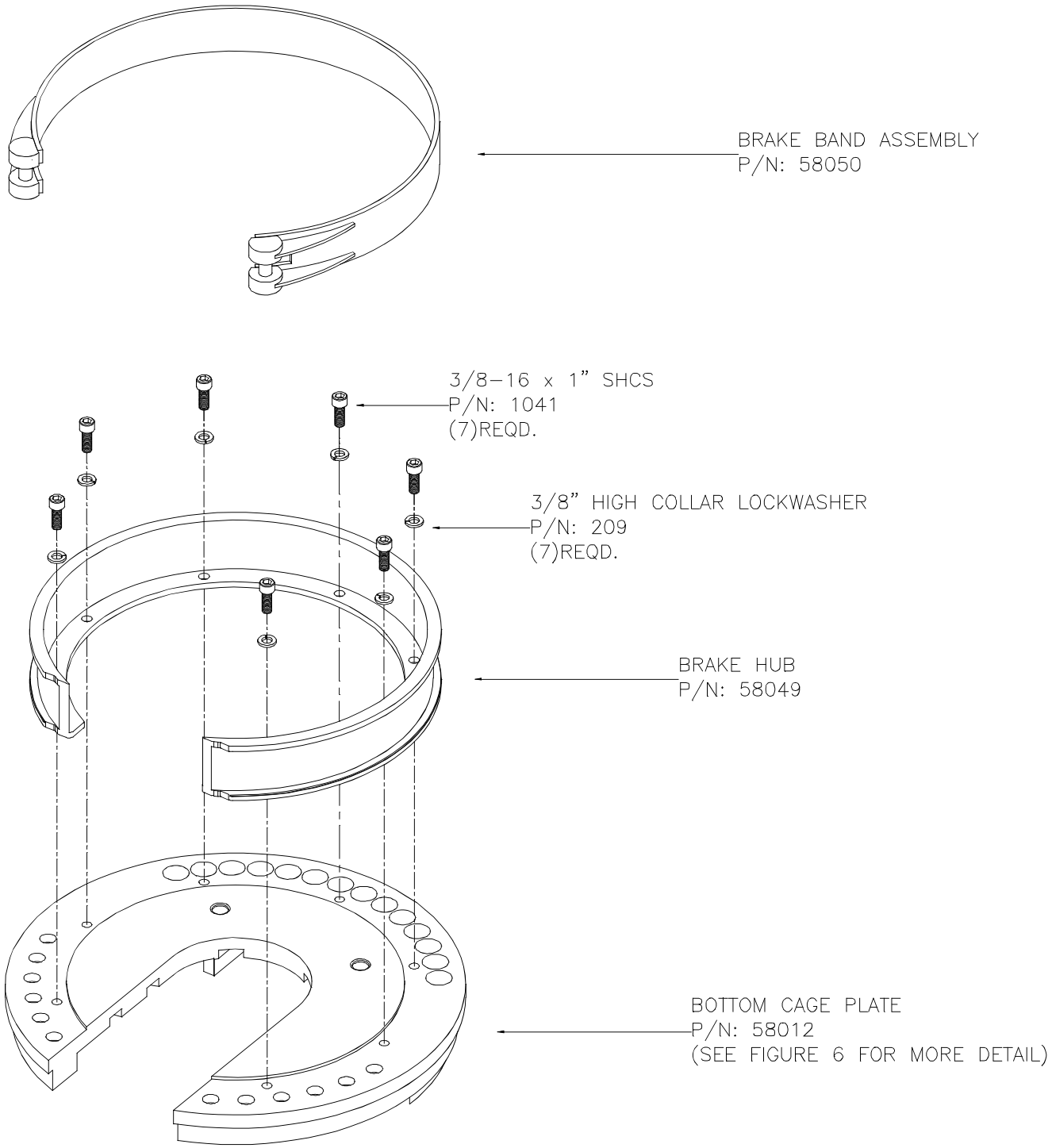


FIGURE 3

BRAKE BAND ASSEMBLY

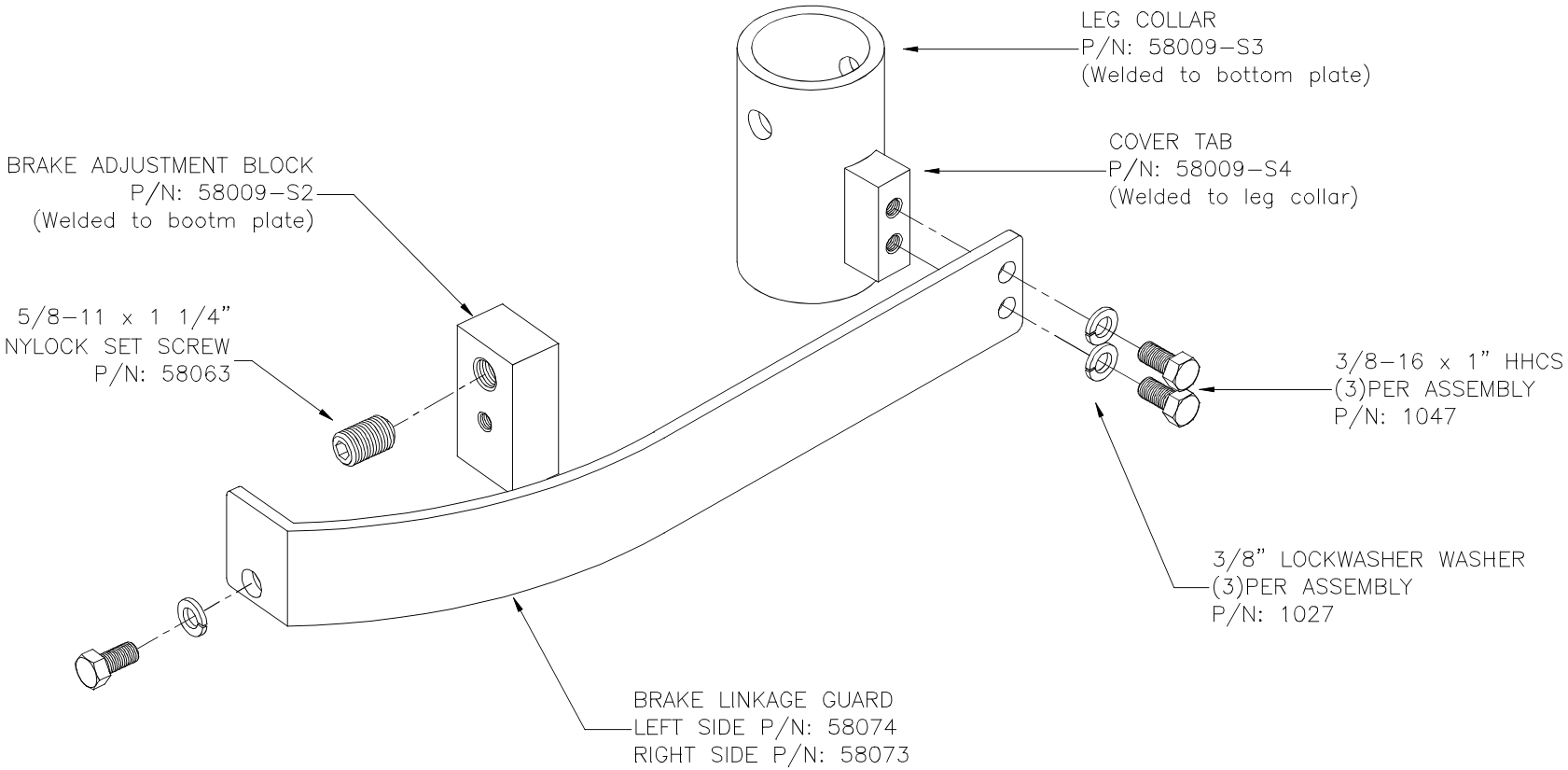
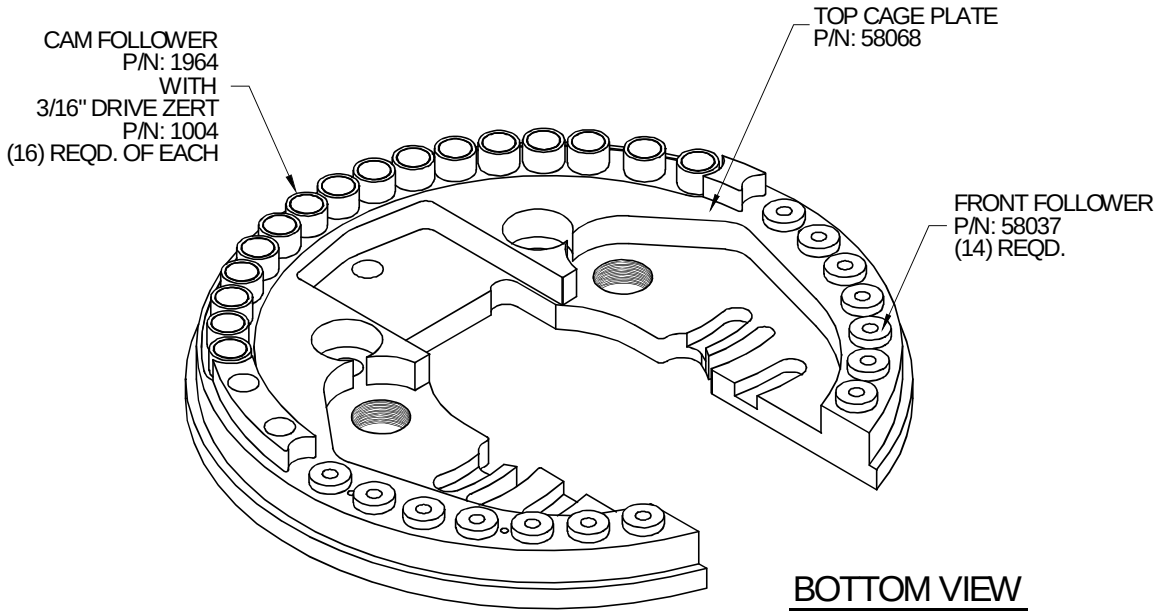


FIGURE 4

BRAKE LINKAGE GUARD ASSEMBLY



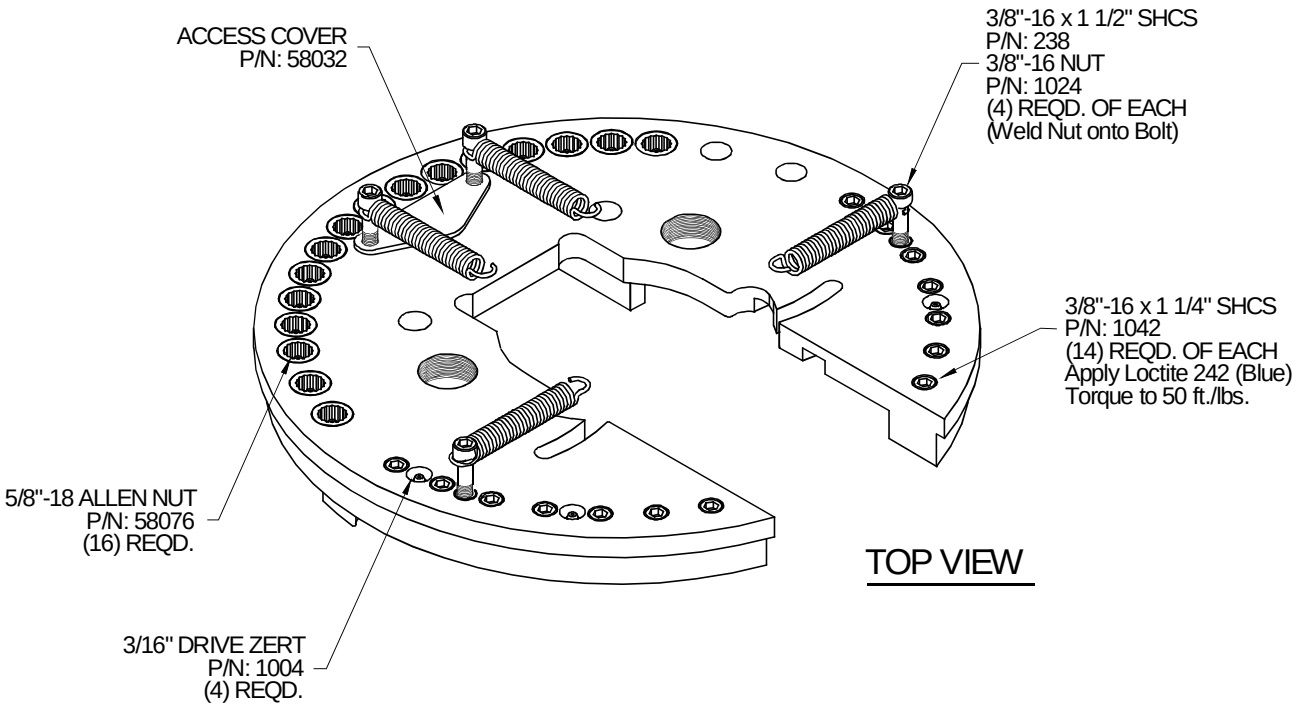


FIGURE 5

TOP CAGE PLATE ASSEMBLY

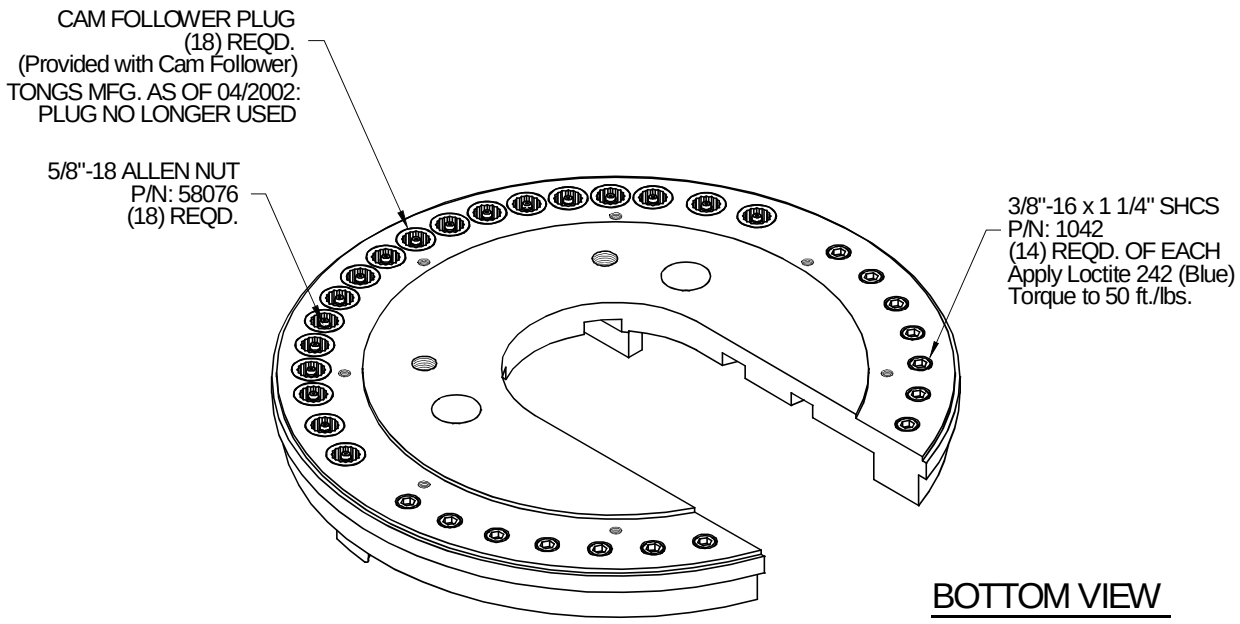
SUPERIOR Manufacturing & Hydraulics

4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
3		11/30/06

REF: P:\Manuals\Equip Manuals\Dwgs\CLJ5500\Top Cage Plate rev3.wpg



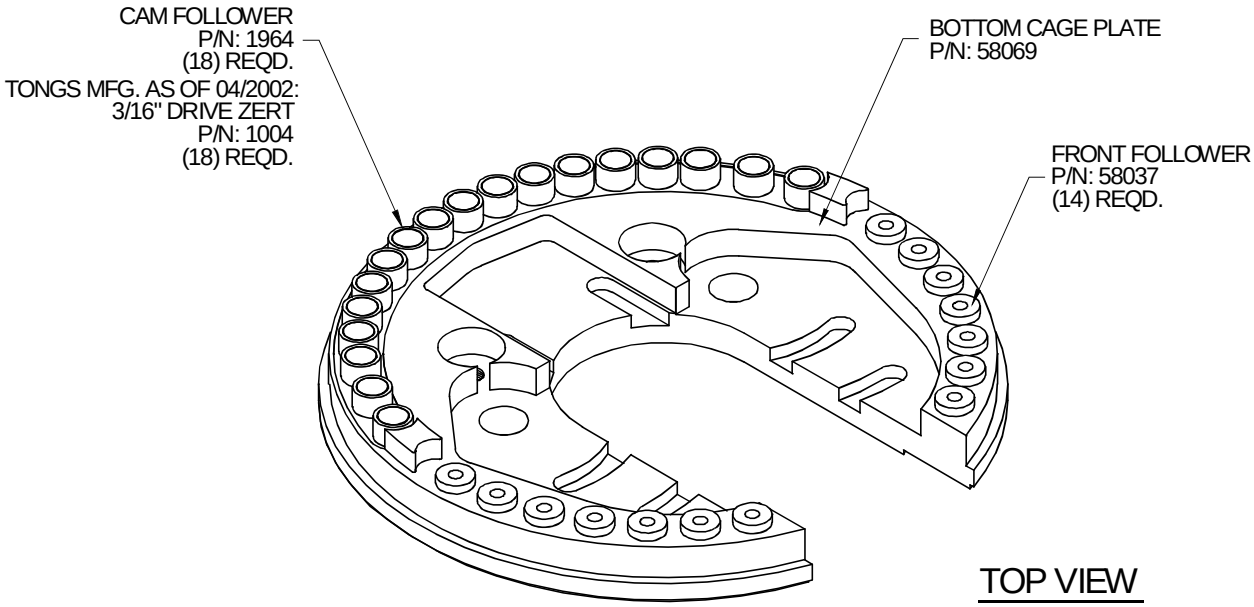


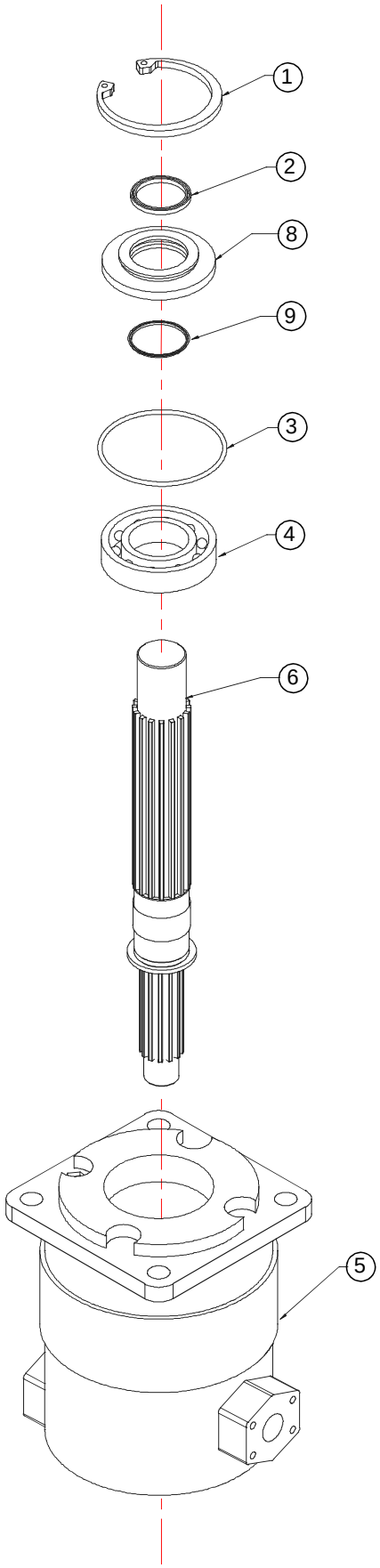
FIGURE 6
BOTTOM CAGE PLATE ASSEMBLY

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

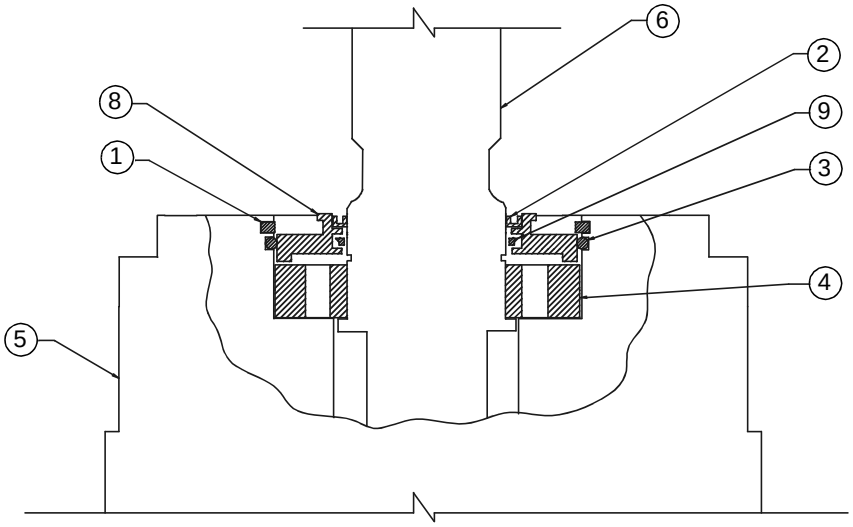
3		11/30/06
REV. #	LOG #	DATE

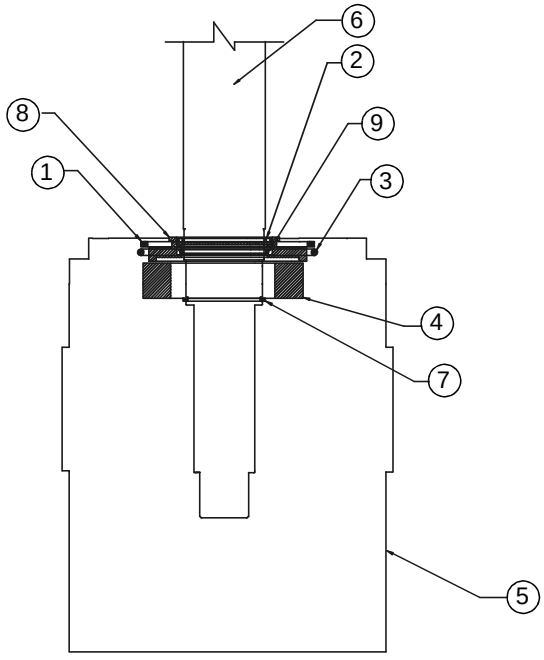
REF: P:\Manuals\Equip Manuals\Dwgs\CLJ5500\Bottom Cage Plate rev3.wpg



Item #	Qty.	Part Number	Part Name
1	1	0150111 ★	SNAP RING
2	1	MCN-1377 ★	WIPER RING
3	1	2-150 ★	O-RING
4	1	0150710 ★	MOTOR SHAFT BEARING
5	1	- - - - - ★	RINEER GA-15 MOTOR
6	1	- - - - -	MOTOR SHAFT
7	1	1945	SNAP RING
8	1	45077-A	SEAL RETAINER
9	1	12501375	POLYPACK SEAL

★ COMPONENTS OF MOTOR





WITH WIPER RING

FOR CLARITY PURPOSE ONLY
NOT TO SCALE

MOTOR ASSEMBLY

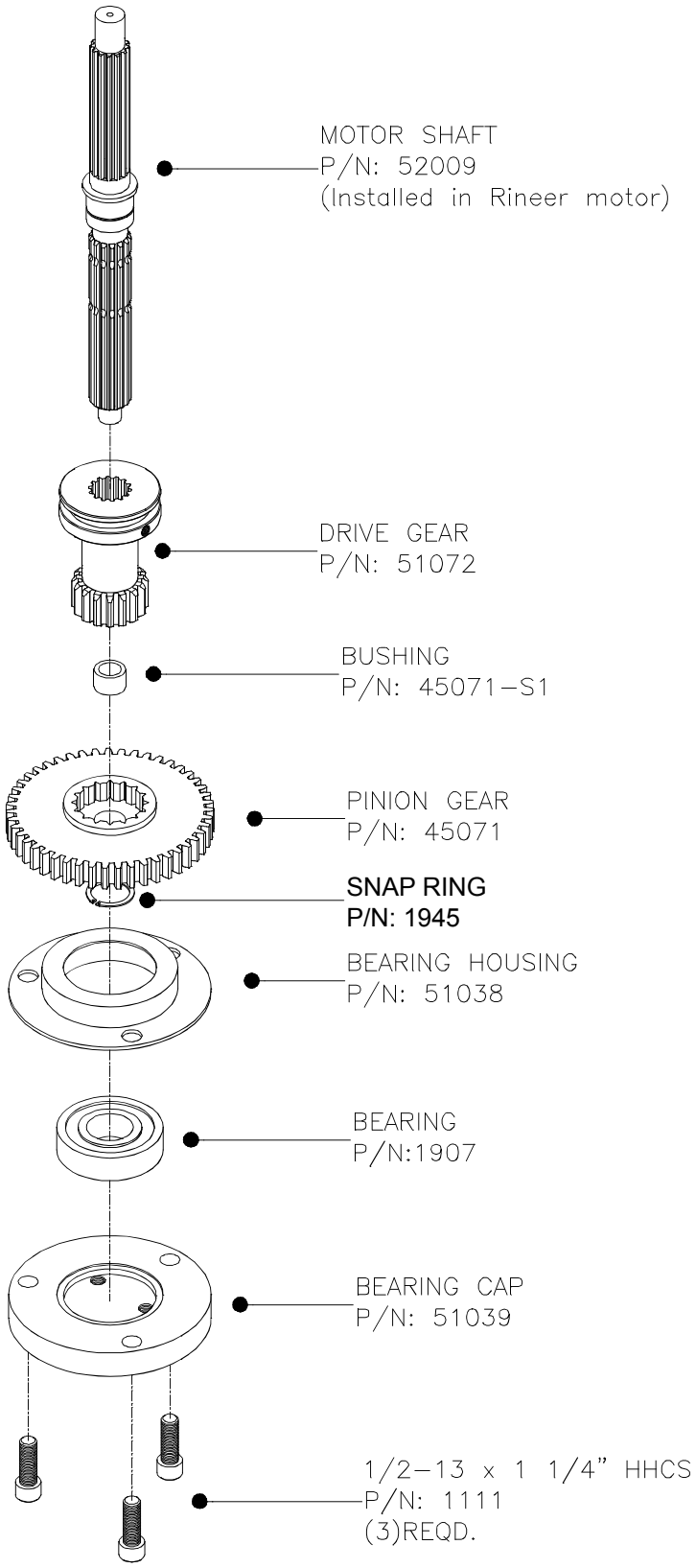
SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

		07/20/06
REV. #	LOG #	DATE

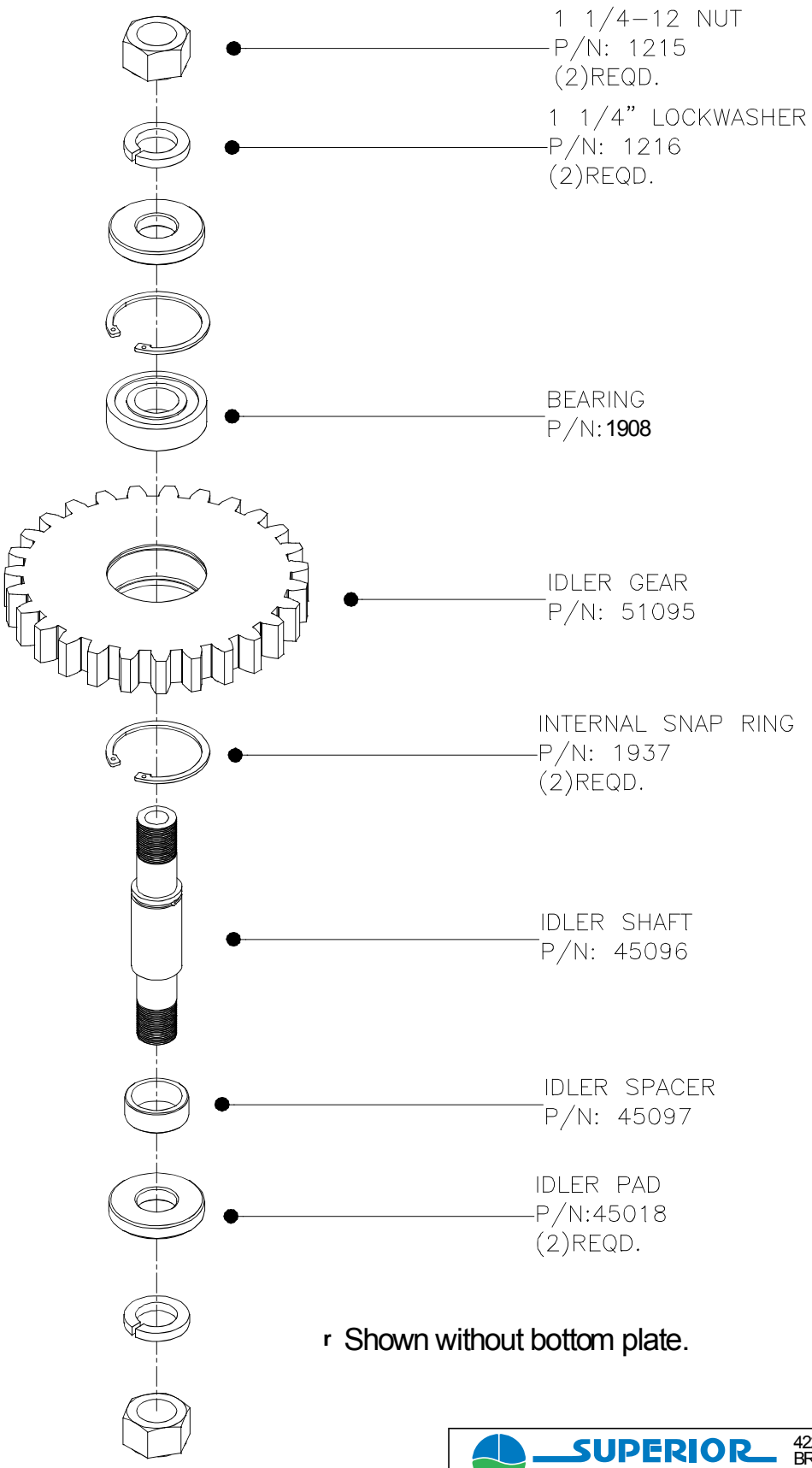
REF: P:\Manuals\Equip Manuals\Dwgs\Motor Motor CLE4500 CLES5500 CLJ5500.wpg

THIS PAGE LEFT BLANK INTENTIONALLY



• Shown without bottom plate.

FIGURE 7
MOTOR GEAR ASSEMBLY



r Shown without bottom plate.

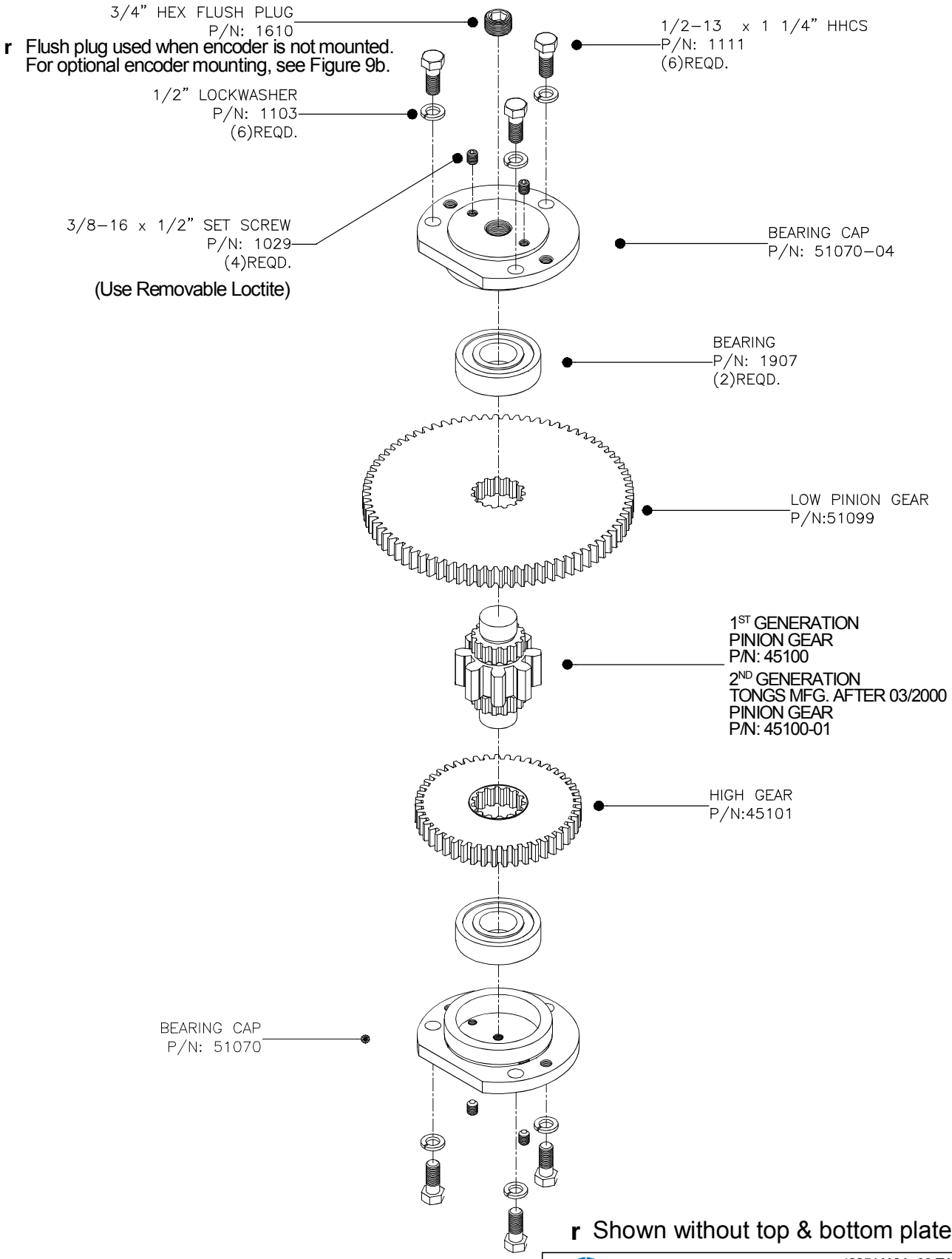
FIGURE 8
IDLER GEAR ASSEMBLY

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1		04/26/02

REF: S:\Equip Manuals-Dwgs\CLJ5500\Figure 8 rev1.wpg



r Shown without top & bottom plates.

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1		04/26/02

REF: S:\Equip Manuals-Dwgs\CLJ5500\Figure 9 rev1.wpg

FIGURE 9
PINION GEAR ASSEMBLY

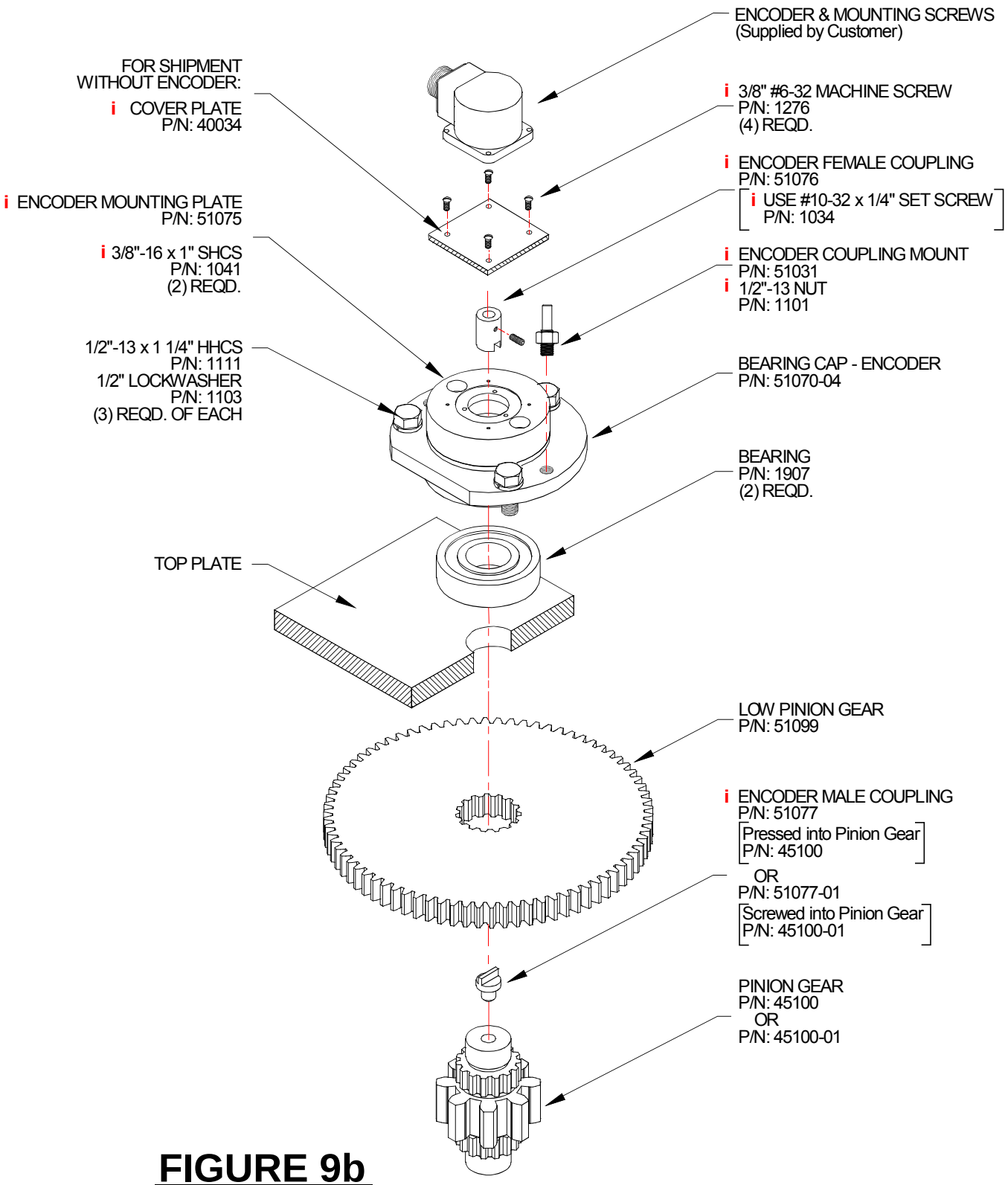


FIGURE 9b

PINION GEAR ASSEMBLY WITH STD. ENCODER

ENCODER ASSEMBLY NO. 51074 i

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
2		12/05/00

REF: S:\Equip Manuals-Dwgs\CLJ5500\Pinion w-Encoder rev2.wpg

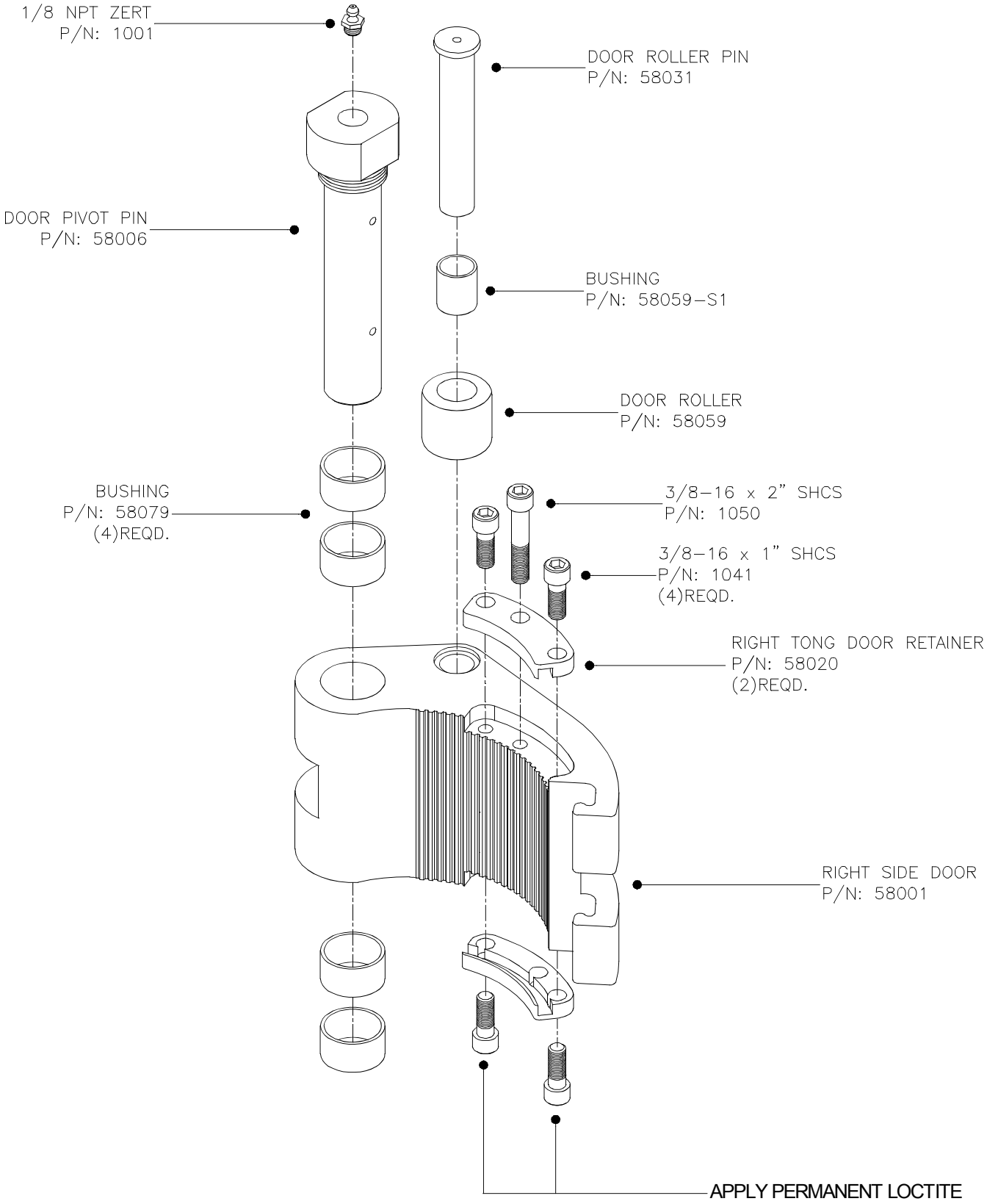


FIGURE 10
RIGHT DOOR ASSEMBLY

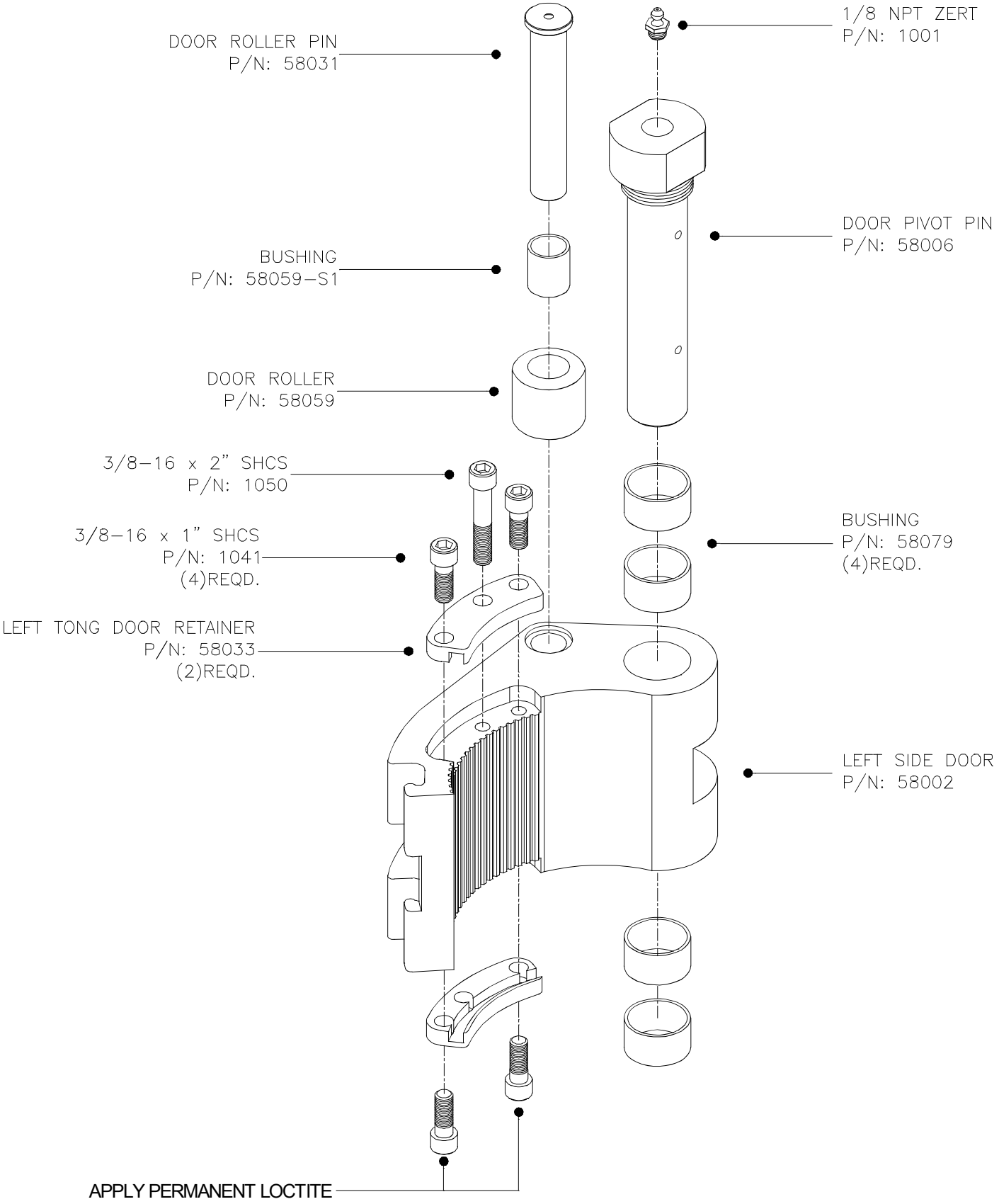


FIGURE 11
LEFT DOOR ASSEMBLY

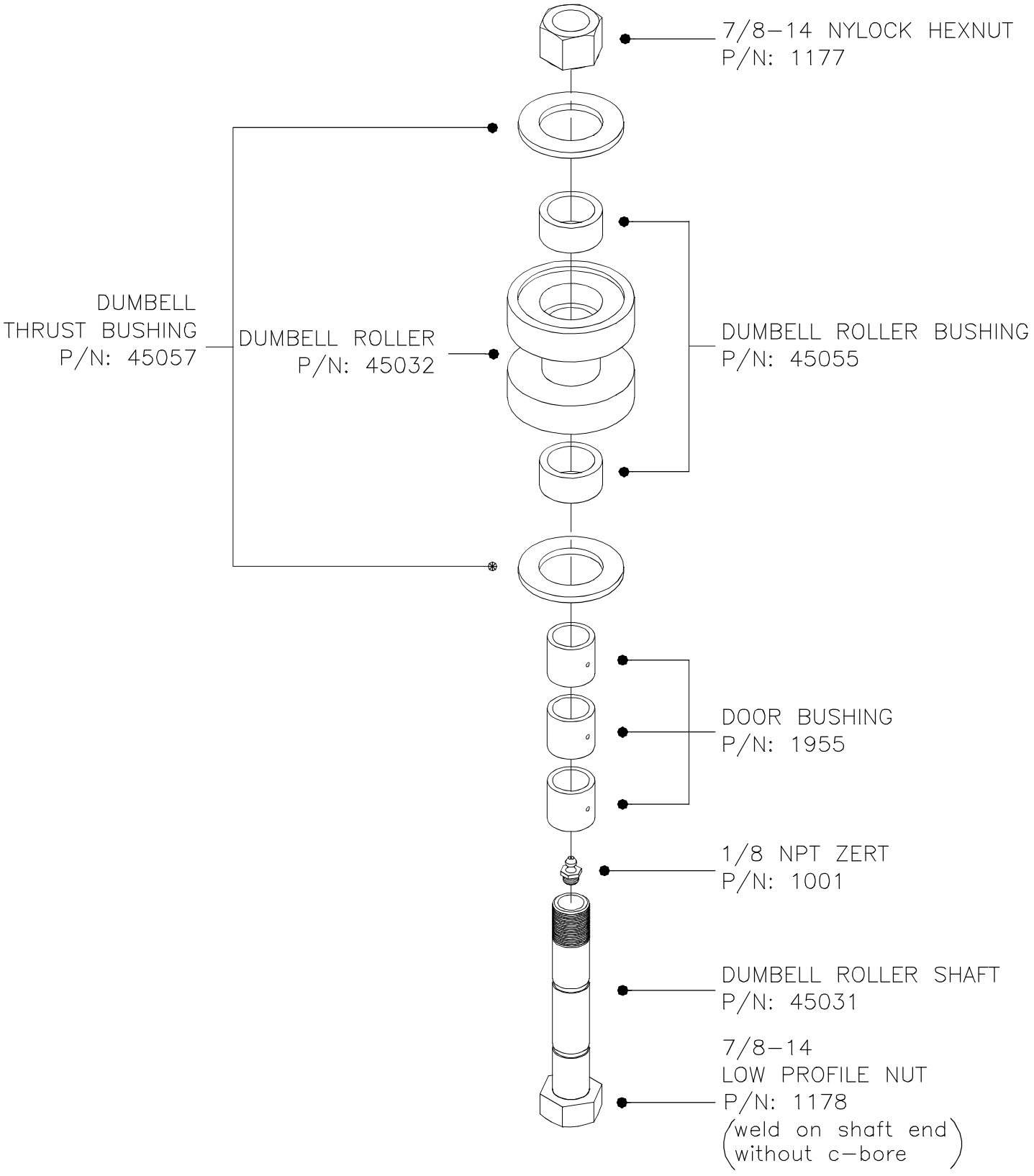
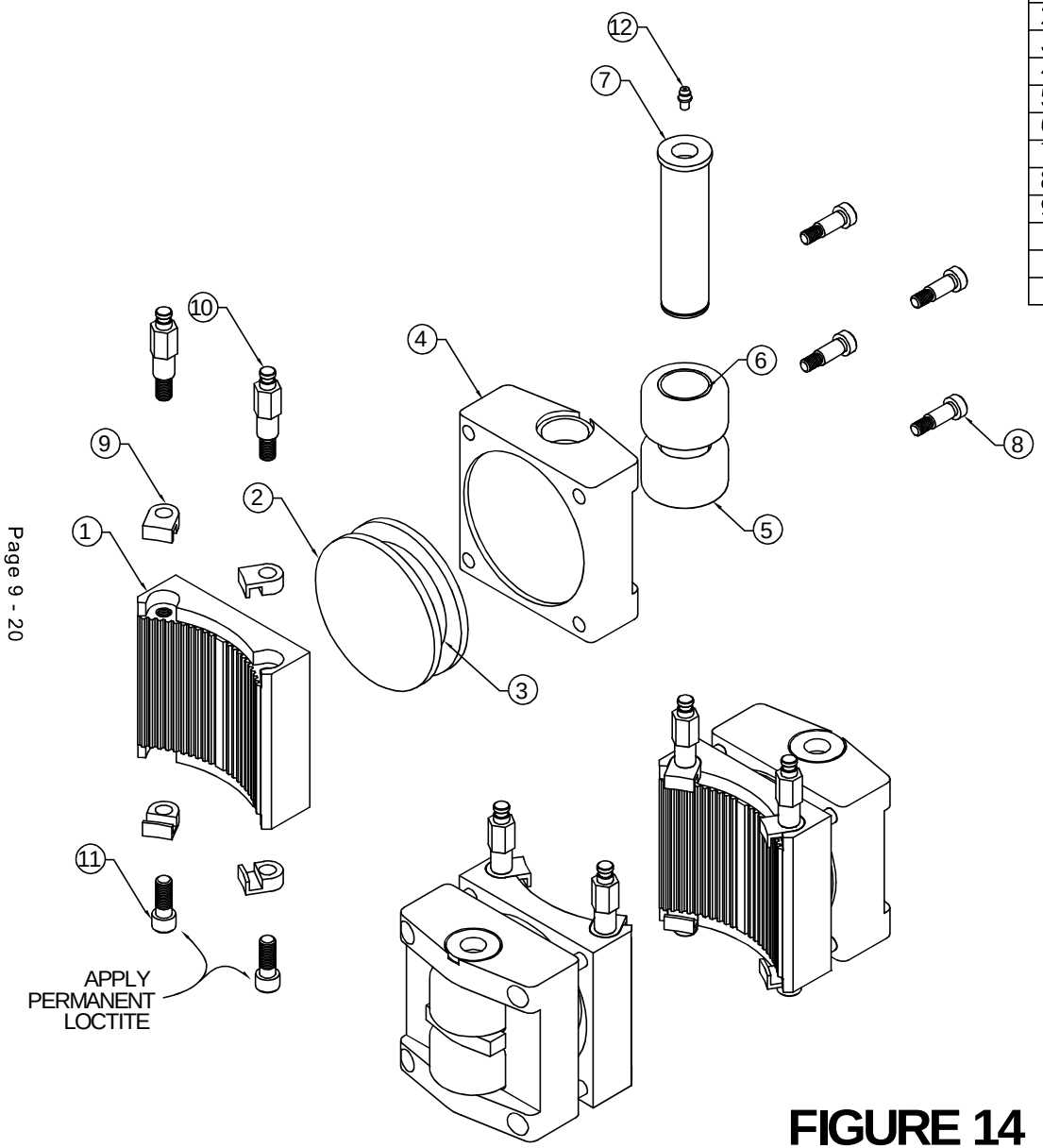


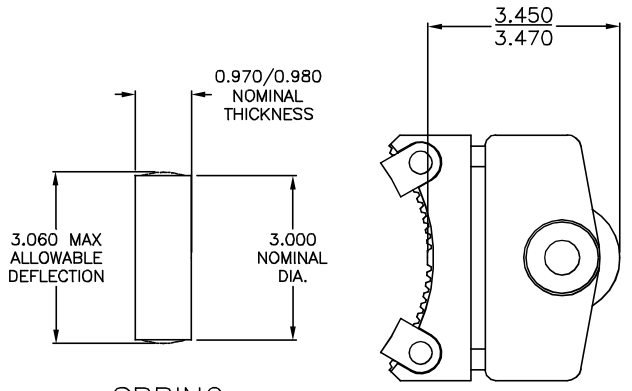
FIGURE 12
DUMBELL ROLLER ASSEMBLY



Item No.	Qty.req. /unit	Description	Part No.
1	1	REAR JAW HOUSING	58015
2	2	SPRING PLATE	SPG5500-S1
3	1	SPRING	SPG5500-S2
4	1	REAR JAW PLUNGER	58016
5	2	REAR JAW ROLLER	58066
6	4	GARLOK BUSHING 18DU10	58077
7	1	REAR JAW PIN	58078
8	4	3/8" x 3/4" SHOULDER BOLT	1057
9	4	DIE CLIP	58019
10	2	SPRING RETAINER POST	58065
11	2	SHCS 3/8-16 x 1"	1041
12	1	3/16" DRIVE ZERT	1004

ASSEMBLY PROCEDURE

A. Inspect spring for cracks or deformation.
B. Snap spring into recess in plates.
C. Install spring package in counterbores.
D. Lubricate shoulder bolts with Never-Seez and torque to 16 ft.-lbs.
E. Lubricate roller bushing with grease.
F. Install rollers & pins.
Verify that they rotate freely.
G. Verify overall length of 3.450/3.470.



SPRING

FIGURE 14
REAR JAW ASSEMBLY

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

1		11/30/06
REV. #	LOG #	DATE

REF: P:\Manuals\Equip Manuals\Dwgs\CLJ5500\Rear Jaw rev1.wpg

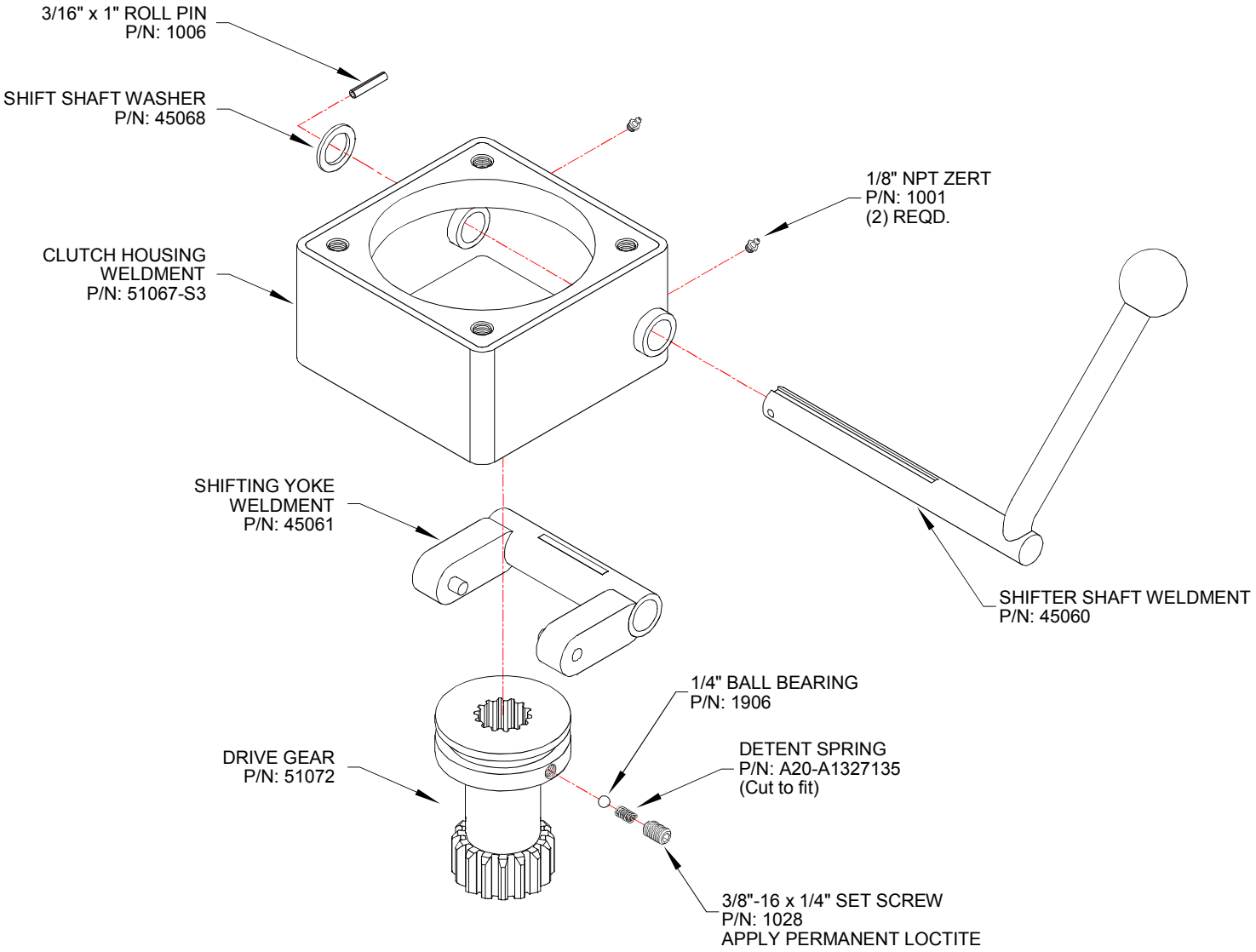


FIGURE 15
CLUTCH BOX ASSEMBLY

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1		04/26/02

REF: S:\Equip Manuals\Dwgs\CLJ5500\Figure 15 rev1.wpg

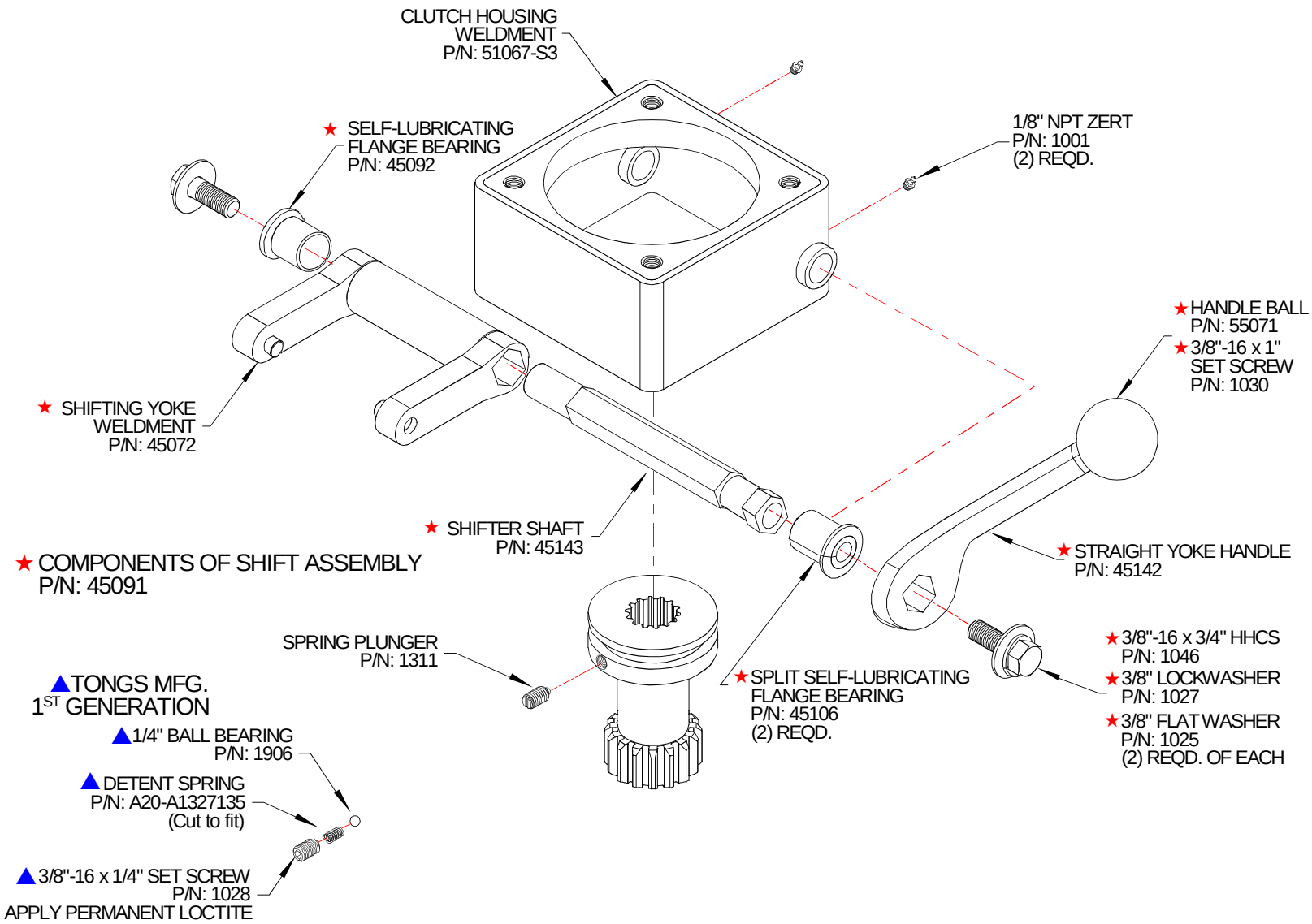


FIGURE 15B
CLUTCH BOX ASSEMBLY
2ND GENERATION

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1		11/30/06

REF: P:\Manuals\Equip Manuals\Dwgs\CLJ5500\Figure 15B rev1.wpg

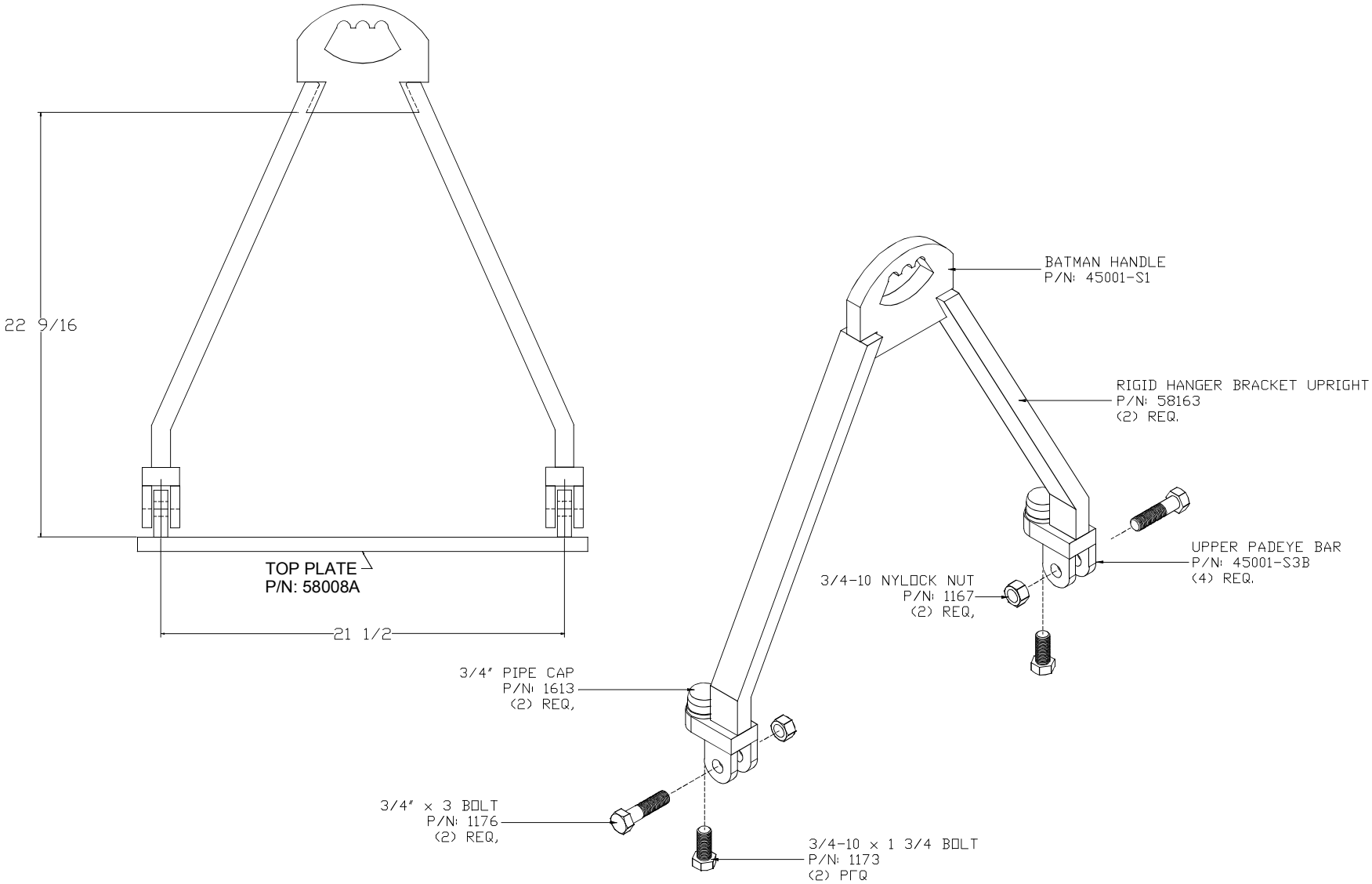


FIGURE 16

HANGER BRACKET ASSEMBLY

ASSEMBLY NO. 58070

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1		04/29/02

REF: S:\Equip Manuals\Dwgs\CLJ5500\Figure 16 rev1.wpg

THIS PAGE LEFT BLANK INTENTIONALLY

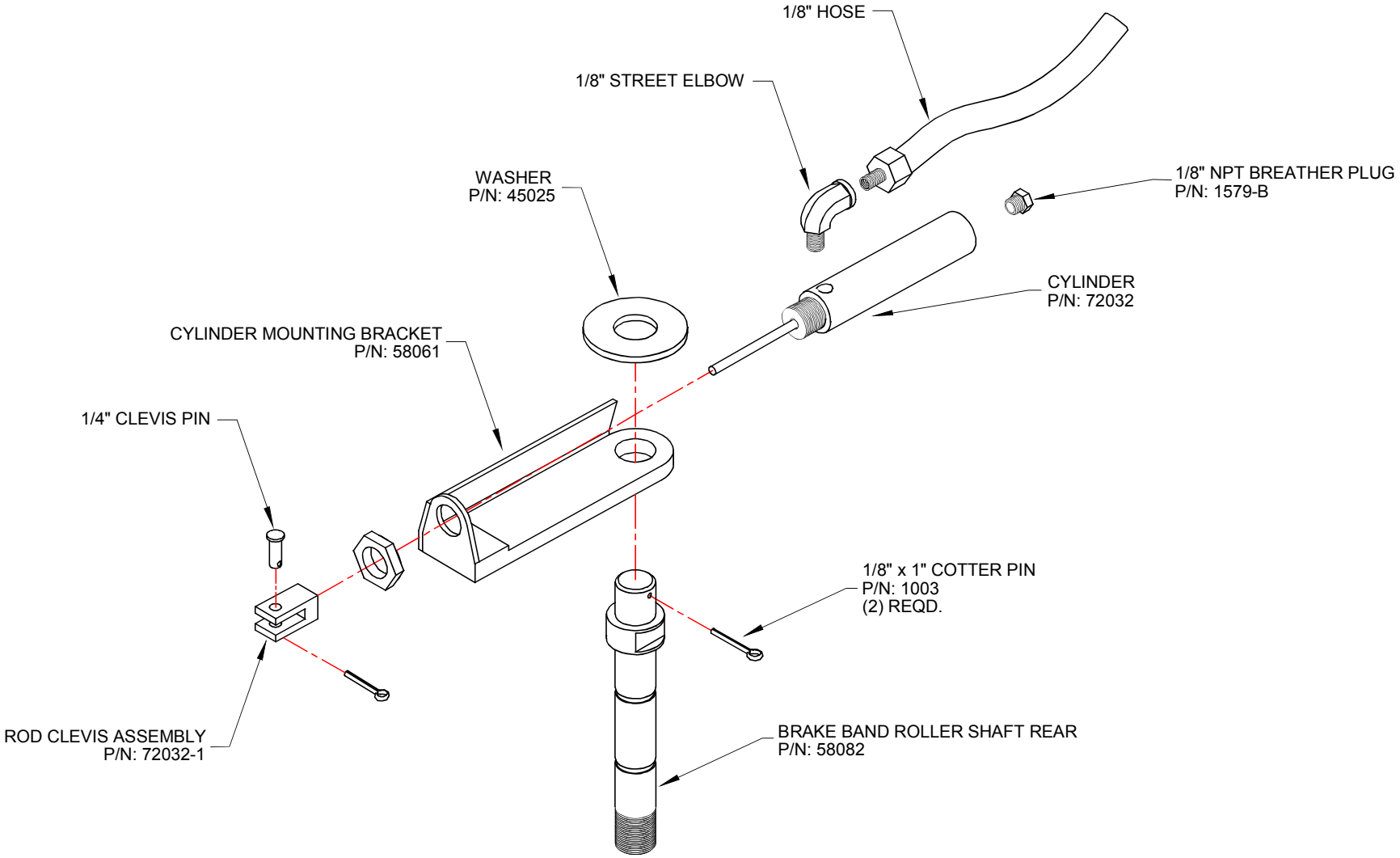


FIGURE 17

CYLINDER MOUNT ASSEMBLY

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1	99-12-014	12/14/99

REF: S:\Equip Manuals-Dwgs\CLJ5500\Cyl Mount rev1.wpg

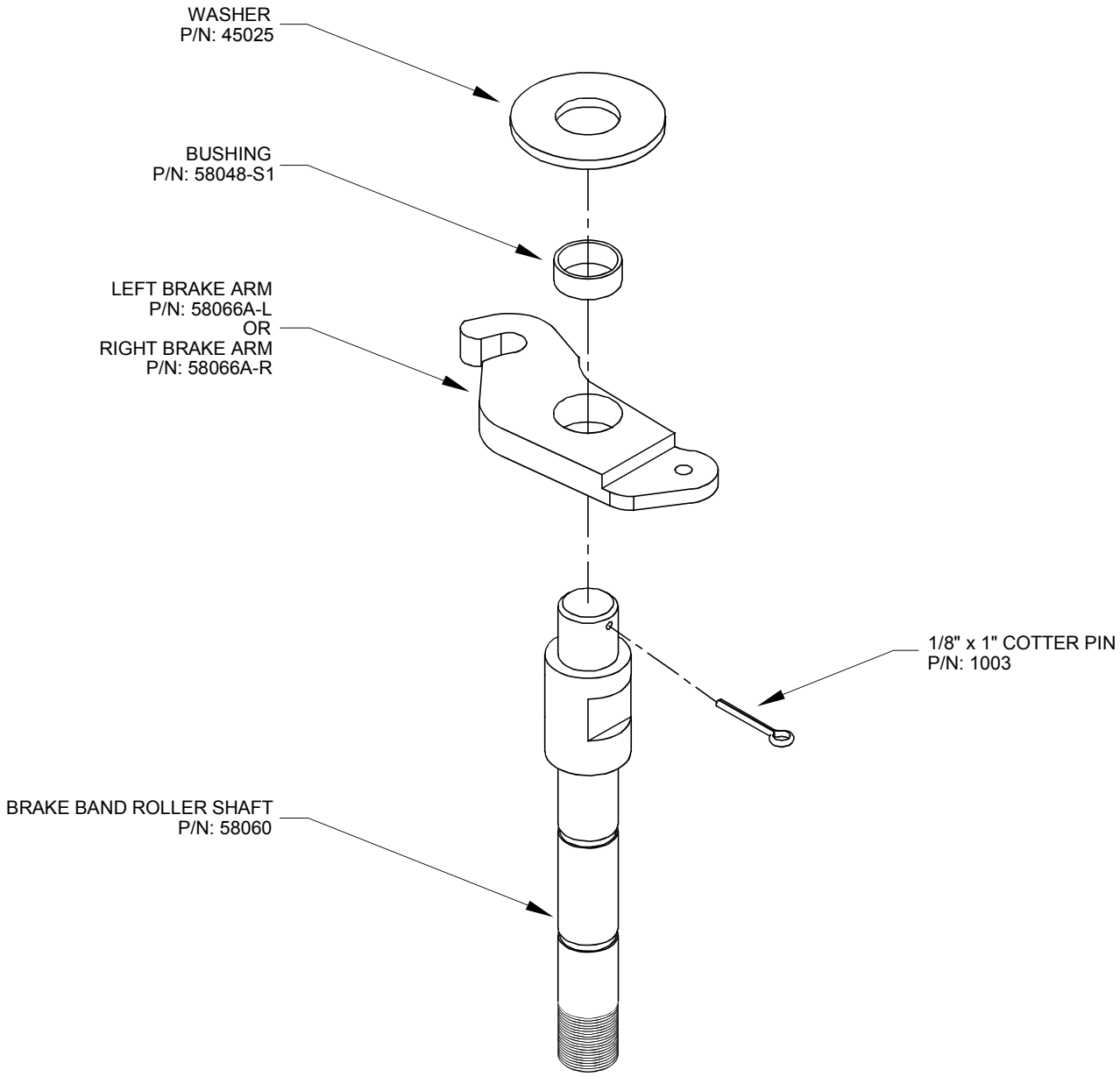


FIGURE 18

LEFT & RIGHT HYDRAULIC BRAKE ARM ASSEMBLY

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1	99-12-032	12/23/99

REF: S:\Equip Manuals-Dwgs\CLJ5500\Brake Arm-Hyd rev1.wpg

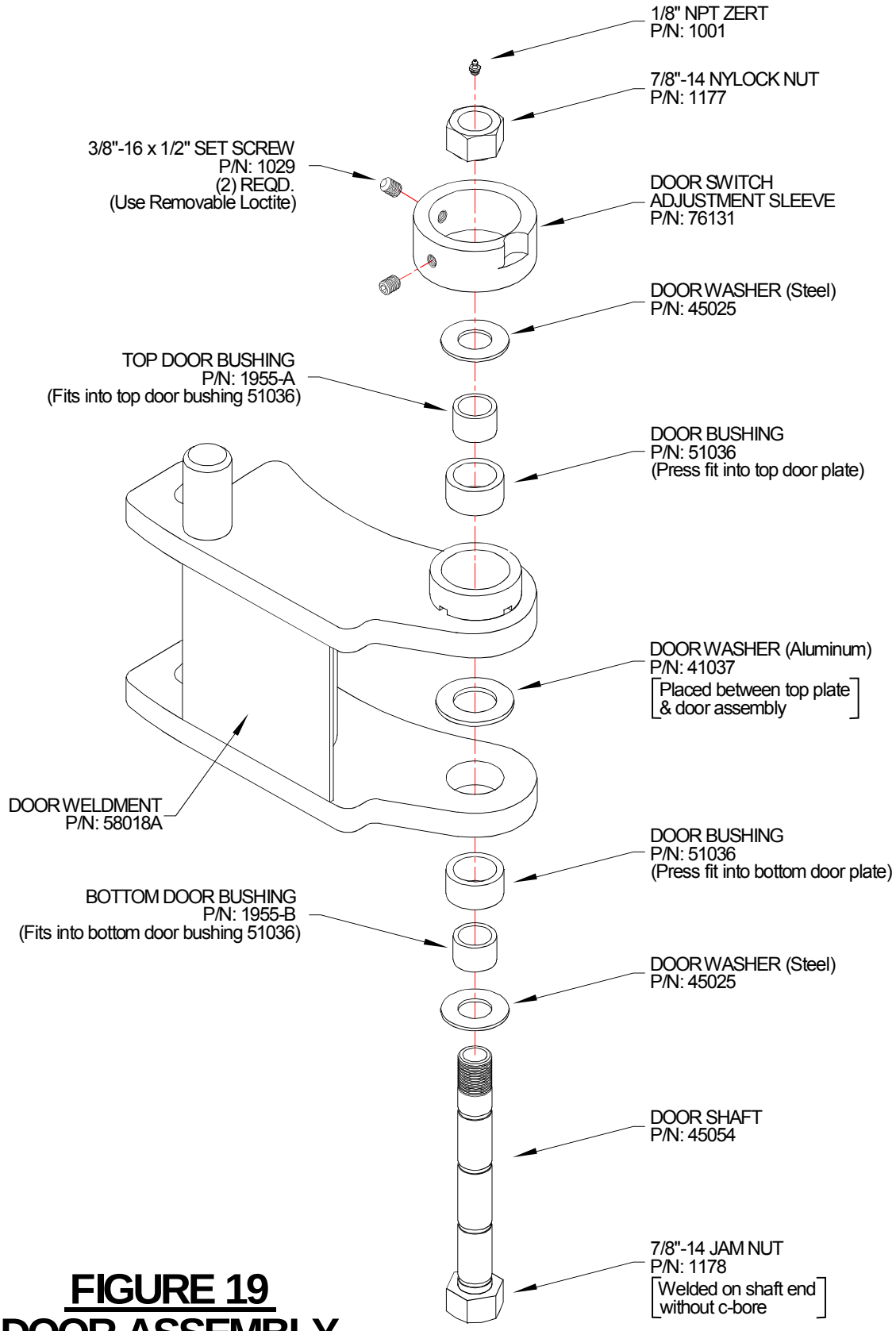


FIGURE 19
DOOR ASSEMBLY
1ST GENERATION
FOR PRODUCTIONS BEFORE 11/2000

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1		04/29/02

REF: S:\Equip Manuals-Dwgs\CLJ5500\Figure 19 rev1.wpg

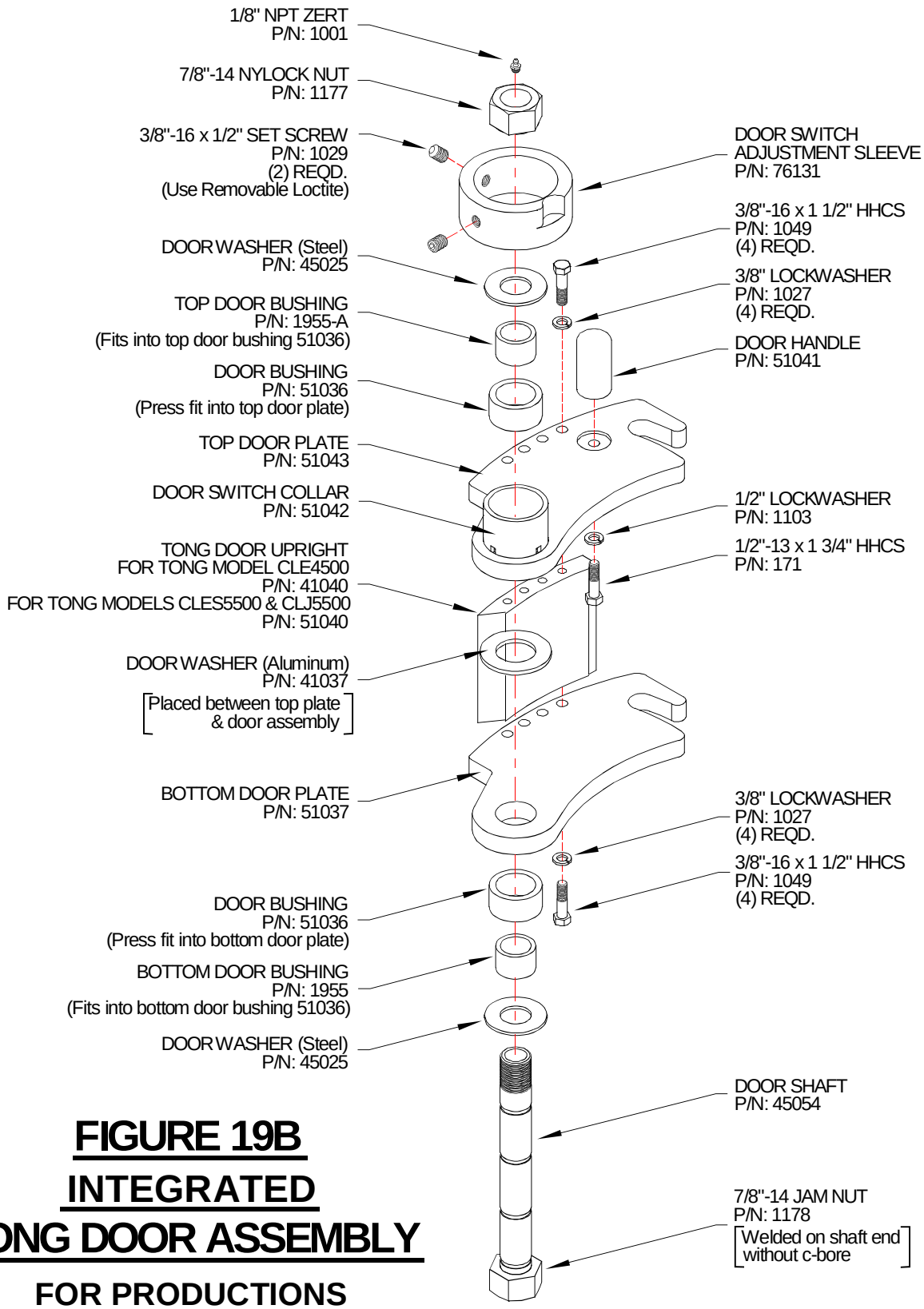


FIGURE 19B
INTEGRATED
TONG DOOR ASSEMBLY

FOR PRODUCTIONS AFTER 11/2000

FOR TONG MODEL CLE4500
DOOR ASSEMBLY NO. 41035B
FOR TONG MODELS CLES5500 & CLJ5500
DOOR ASSEMBLY NUMBER 51035B

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1		04/29/02

REF: P:\Manuals\Equip Manuals\Dwgs\CLES5500\Door-Integr rev1.wpg

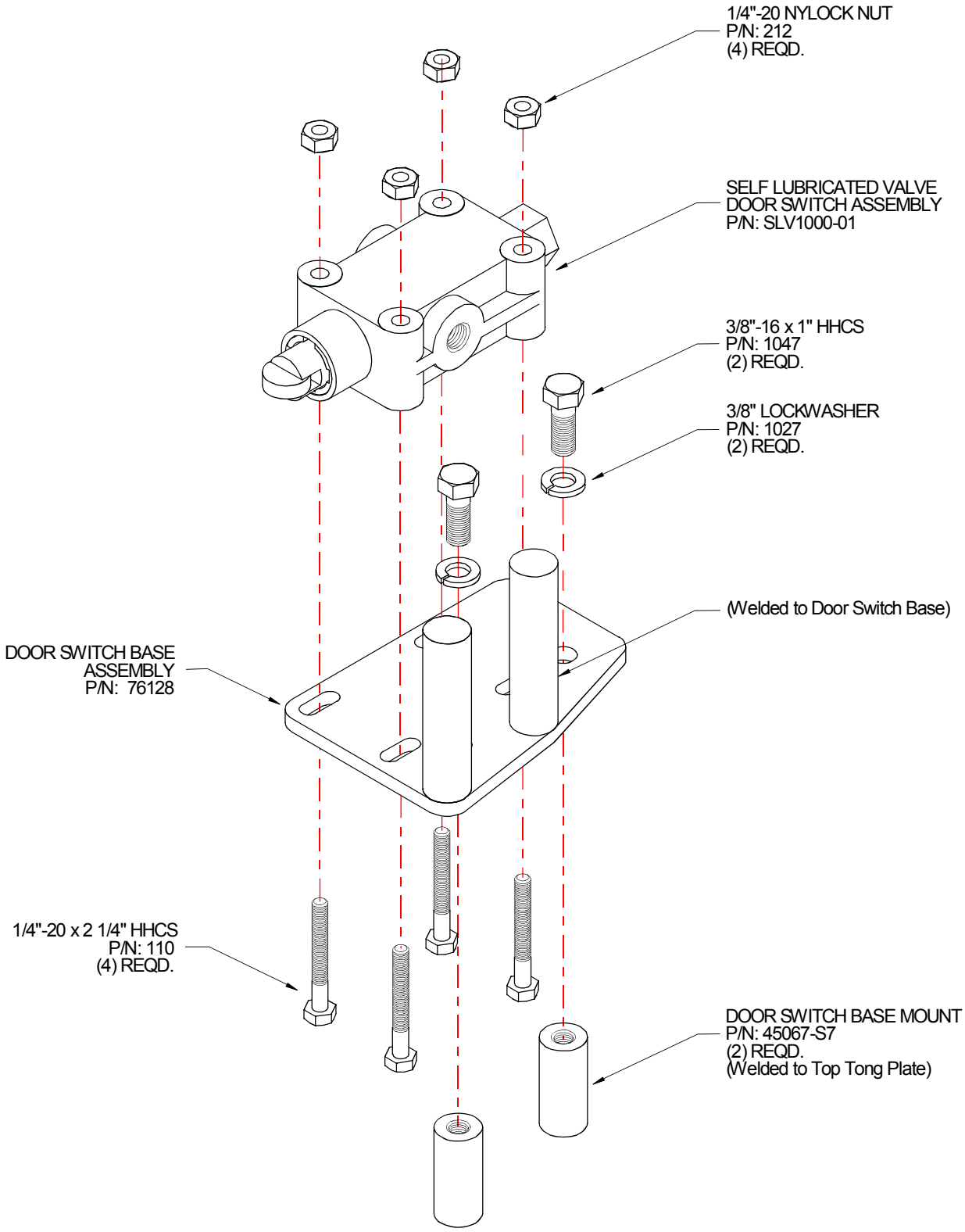


FIGURE 20

DOOR SWITCH ASSEMBLY

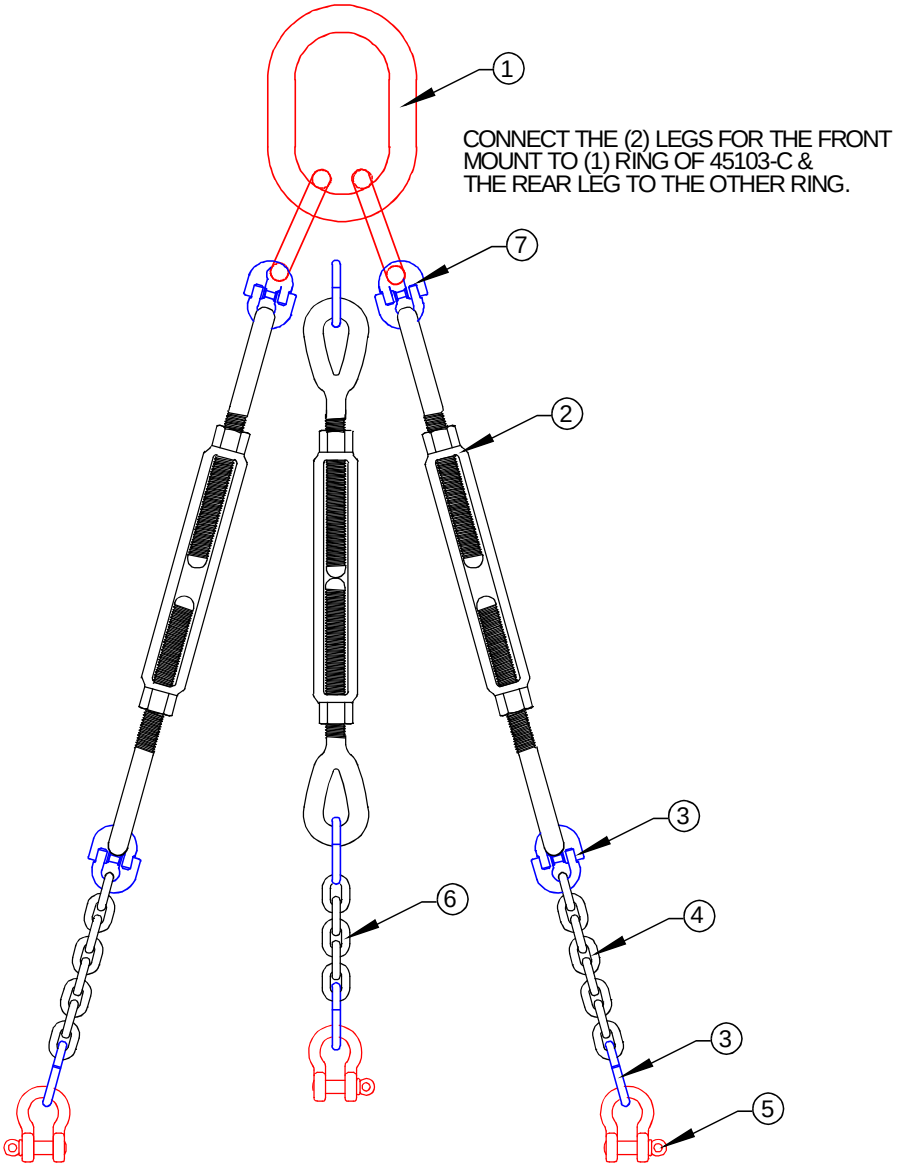
SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1	99-12-015	12/14/99

REF: S:\Equip Manuals-Dwgs\CLJ5500\Door Switch rev1.wpg

Item #	Qty.	Part Number	Description
1	1	45103-C	1" A-345 MASTER LINK ASSEMBLY
2	3	55001-02	3/4" x 6" TURNBUCKLE
3	6	40027-S3	5/16" CONNECTING LINK
4	2	- - - - -	5/16" CHAIN LINK (8 LINKS)
5	3	40027-S4A	1/2" SHACKLE
6	1	- - - - -	5/16" CHAIN LINK (5 LINKS)
7	3	40027-S3B	3/8" CONNECTING LINK



BRIDLE ASSEMBLY

2nd GENERATION
ASSEMBLY NUMBER 55001-01

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
2		09/15/05

REF: P:\Manuals\Equip Manuals\Dwgs\CLE7625UHT\Bridle Assy rev2.wpg

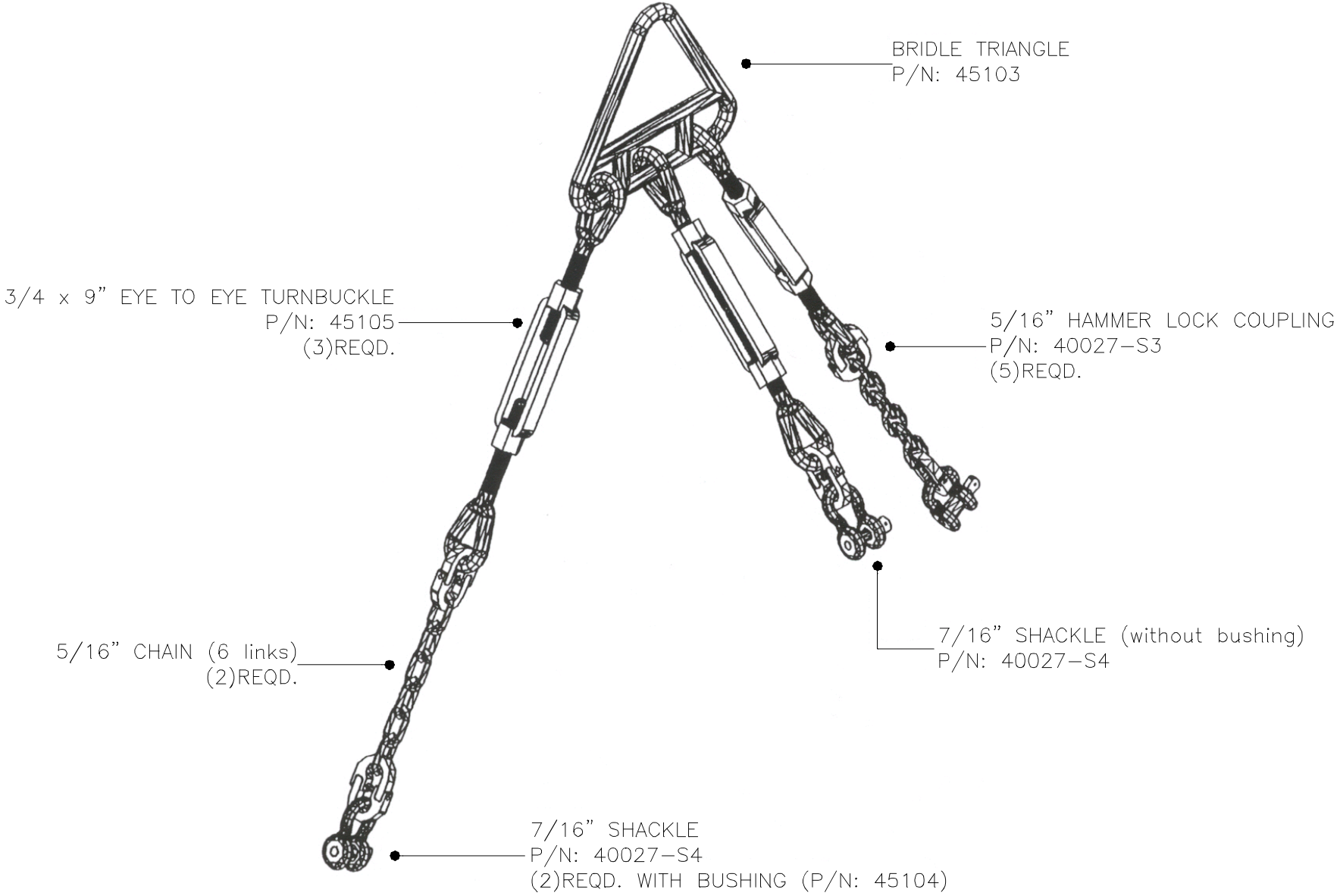


FIGURE 21
BRIDLE ASSEMBLY

Item #	Qty.	Part Number	Part Name
1	1	58084	RING GEAR W/MOD 5° CAM
2	2	58036	RING GEAR LOCKING PIN
3	2	58080	3/16" x 3/4" DOWEL PIN
4	1	58085	INSERT
5	2	58101	PULL DOWEL PIN 3/8" X 1 3/4"

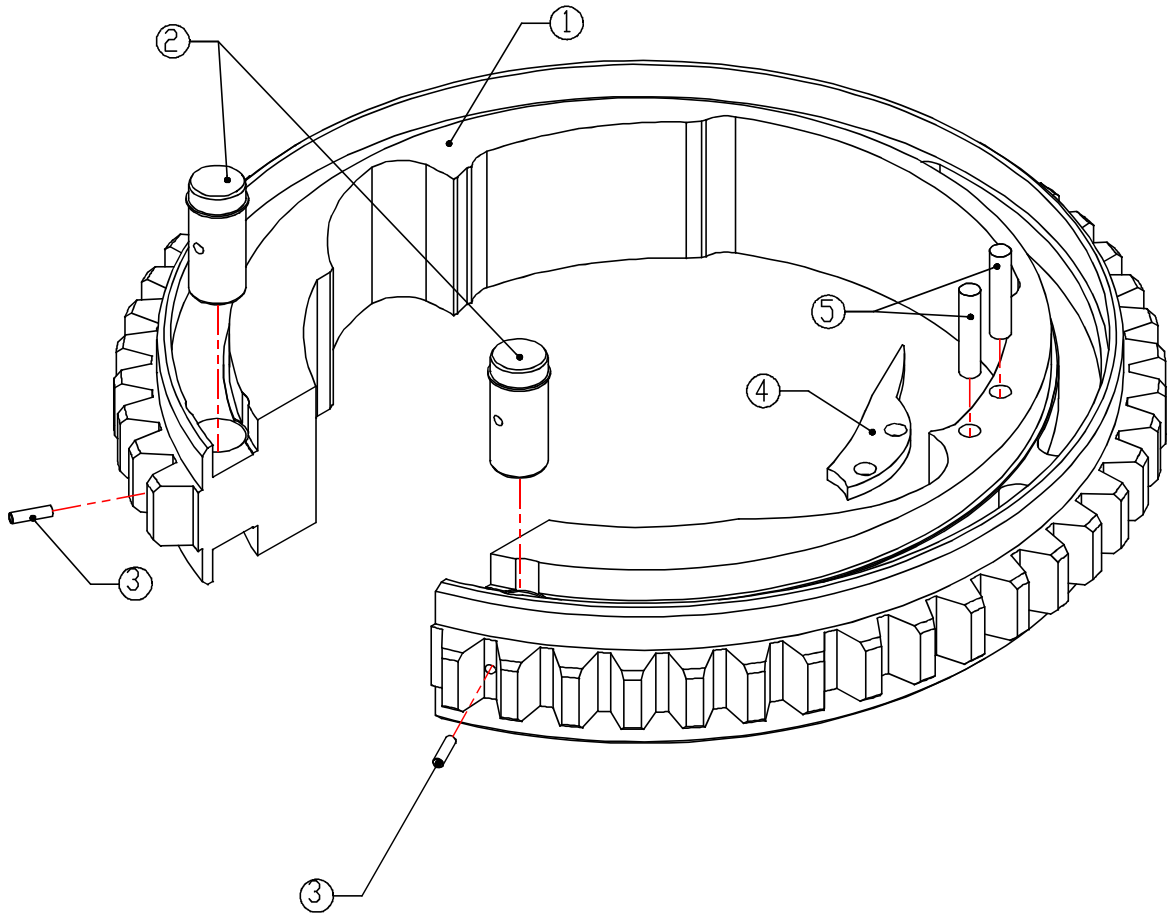


FIGURE 22
RING GEAR ASSEMBLY
ASSEMBLY NO. 58205

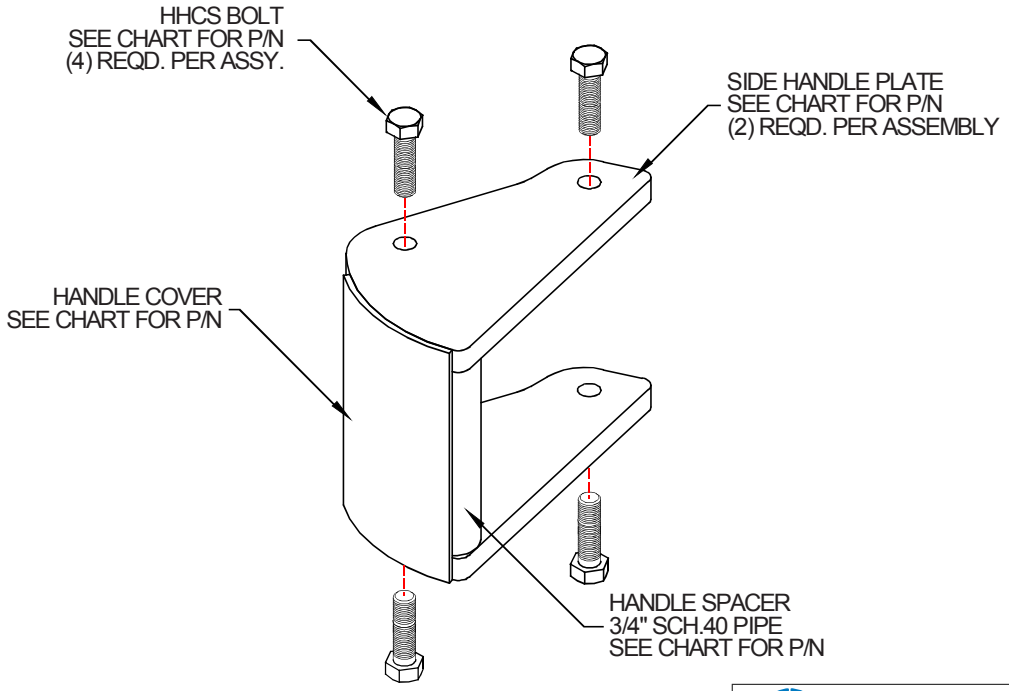
SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
2		11/30/06

REF: P:\Manuals\Equip Manuals\Dwgs\CLJ5500\58205 Ring Gear rev2.wpg

TONG	ASSEMBLY NUMBER	HANDLE SPACER PIPE PART NO.	HANDLE COVER PLATE PART NO.	SIDE HANDLE PLATE PART NO.	HHCS BOLT	
					PART NO.	SIZE
4 1/2 STANDARD	41111	41111-S1	41111-S2	45121	1055	3/8"-16 x 2 1/4"
5 1/2 STANDARD	51111	51111-S1	51111-S2	45119	1055	3/8"-16 x 2 1/4"
5 1/2 **LOCKJAW™**	58086	51111-S1	51111-S2	45121	1055	3/8"-16 x 2 1/4"
5 1/2 UHT & XHT	55141	73017-S1	55141-S2	55200	201	5/8"-11 x 2 1/4"
5 1/2 XHT01	59067	73017-S1	73017-S2	59067-S1	201	5/8"-11 x 2 1/4"
7 5/8 STANDARD	76133	73017-S1	55141-S2	55200	201	5/8"-11 x 2 1/4"
7 5/8 DRILL PIPE -35	73017	73017-S1	73017-S2	14035	201	5/8"-11 x 2 1/4"
7 5/8 **LOCKJAW™**	(2) 73095	73095-S1	73095-S2	14035-01	201	5/8"-11 x 2 1/4"
7 5/8 & 8 5/8 DRILL PIPE -60 & -03	(1) 74095	73095-S1	73095-S2	14035-02	201	5/8"-11 x 2 1/4"



SIDE HANDLE ASSEMBLY

SEE CHART FOR ASSEMBLY NUMBER

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
6		10/24/03

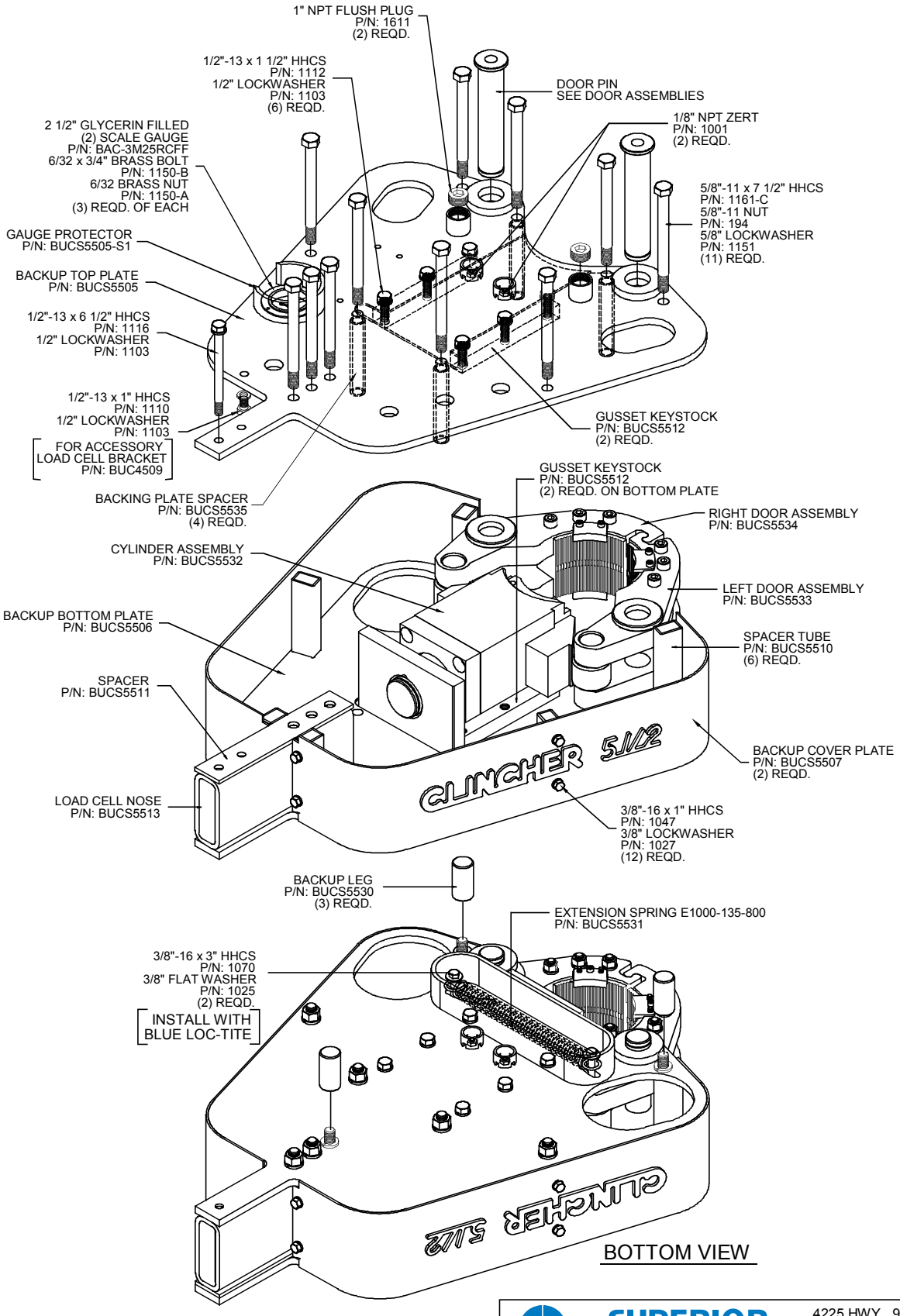
REF: P:\Manuals\Equip Manuals\Dwgs\ILL 1000\ILL1087 Side Hdle rev6.wpg

THIS PAGE LEFT BLANK INTENTIONALLY

TABLE OF CONTENTS

SECTION 10 LOCKJAW™ BACKUP ILLUSTRATIONS MOUNTING KIT ILLUSTRATIONS

BUCS5500 / 5 1/2" **LOCKJAW™** BACKUP ASSEMBLY ..... 10 - 3
RIGHT DOOR ASSEMBLY ..... 10 - 4
LEFT DOOR ASSEMBLY ..... 10 - 5
BUCS5532 / CYLINDER ASSEMBLY ..... 10 - 6
BUCS5560 / MOUNTING KIT AND VALVE PACKAGE ASSEMBLY ..... 10 - 7
VALVE BANK ASSEMBLY ..... 10 - 8
BUCS6250-01 / 6 1/4" **LOCKJAW™** BACKUP ASSEMBLY ..... 10 - 9
BUCS6250-01 / 6 1/4" **LOCKJAW™** BACKUP ASSEMBLY *(sheet 2)* ..... 10 - 10
6 1/4" **LOCKJAW™** BACKUP RIGHT DOOR ASSEMBLY ..... 10 - 11
6 1/4" **LOCKJAW™** BACKUP LEFT DOOR ASSEMBLY ..... 10 - 12
BUCS6032 / 6 1/4" **LOCKJAW™** BACKUP CYLINDER ASSEMBLY ..... 10 - 13
MKBUCS6250 / 6 1/4" BACKUP TO 5 1/2" TONG MOUNTING KIT ..... 10 - 14



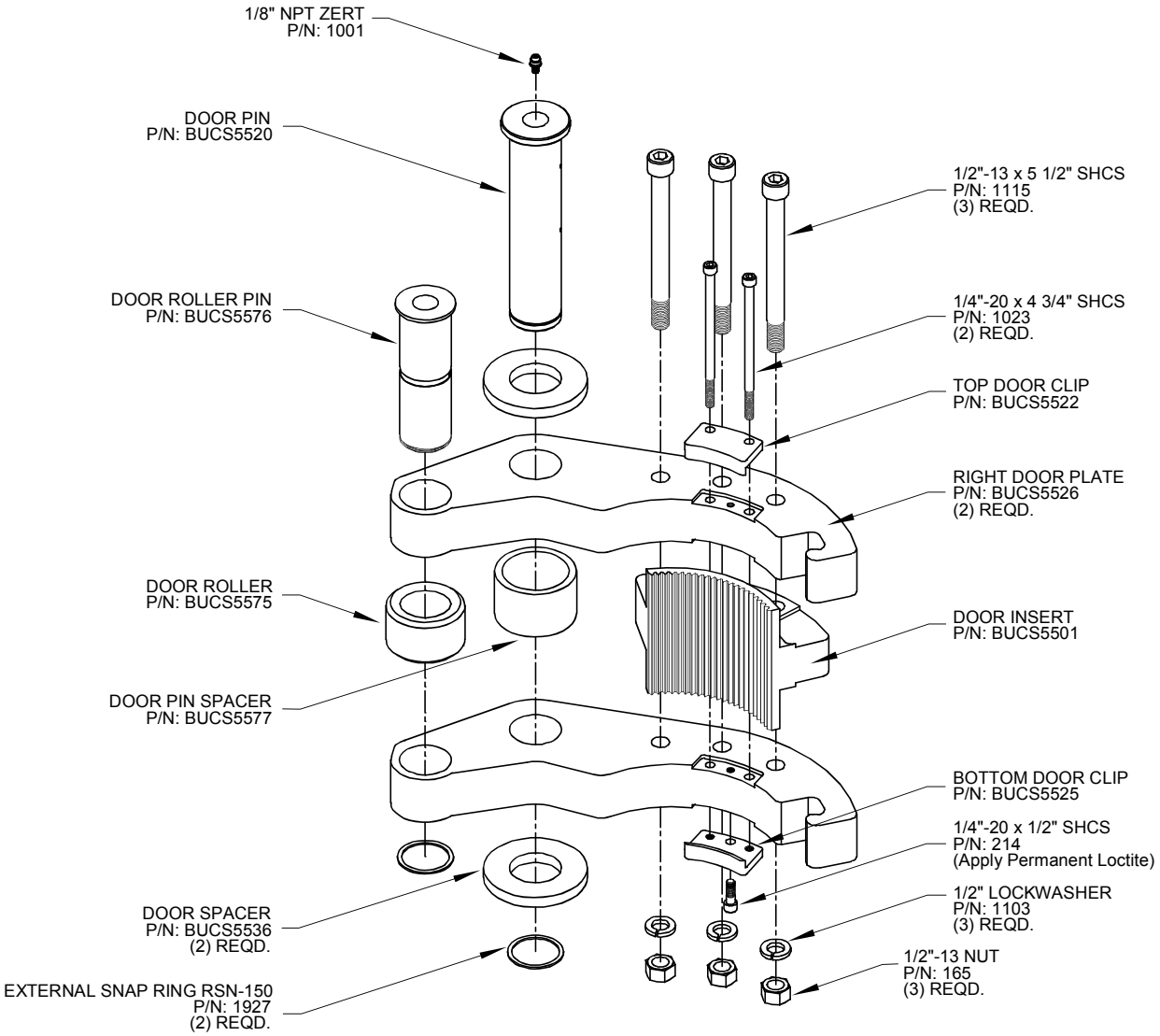
5 1/2" LOCKJAW™ BACKUP

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
2		11/30/06

REF: P:\Manuals\Equip Manuals\Dwgs\BUCS5500\BUCS553DX rev2.wpg



RIGHT DOOR ASSEMBLY

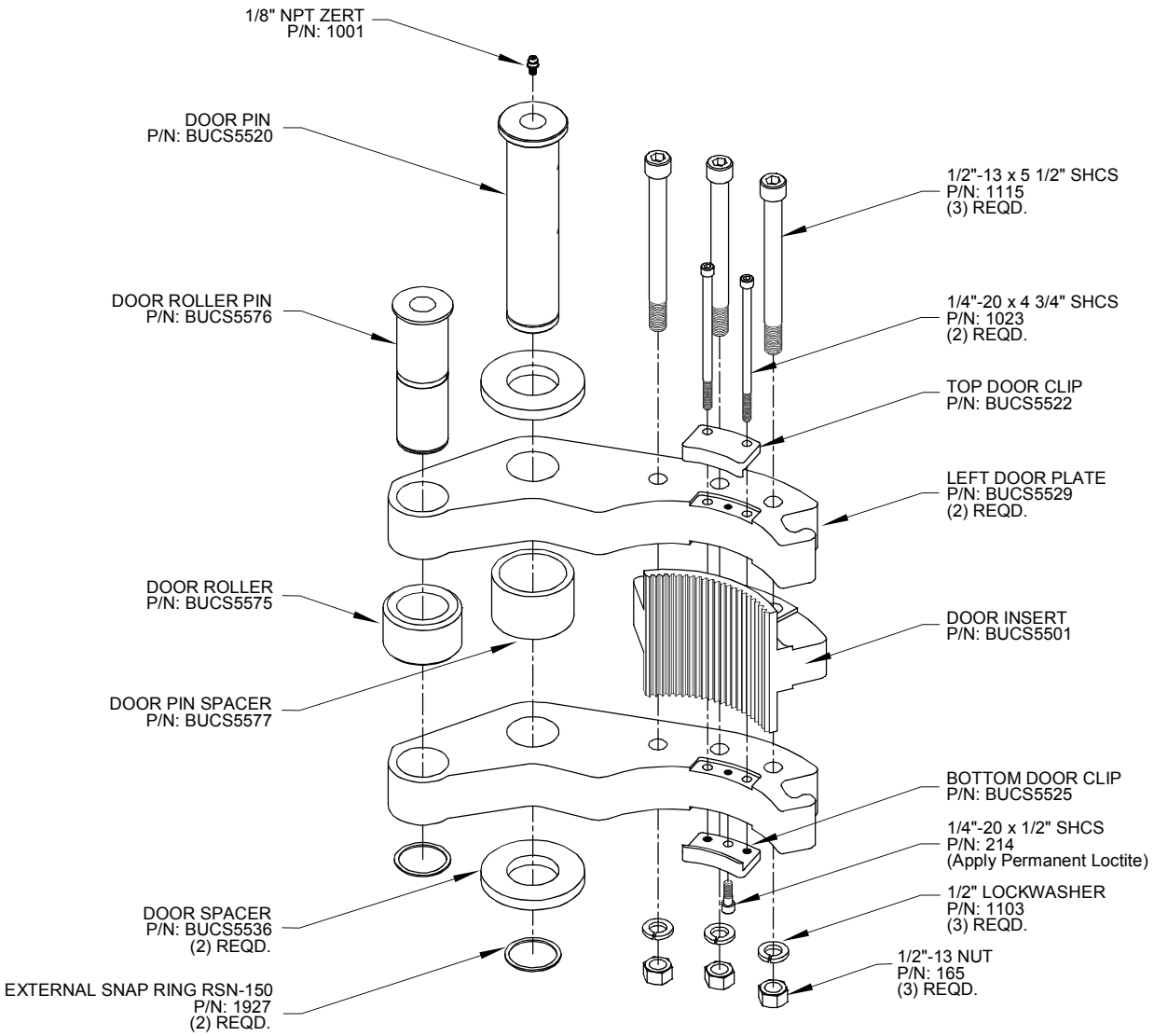
5 1/2" LOCKJAW BACKUP

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1	99-12-033	12/23/99

REF: S:\Equip Manuals-Dwgs\BUCS5500\Door-R rev1.wpg



LEFT DOOR ASSEMBLY

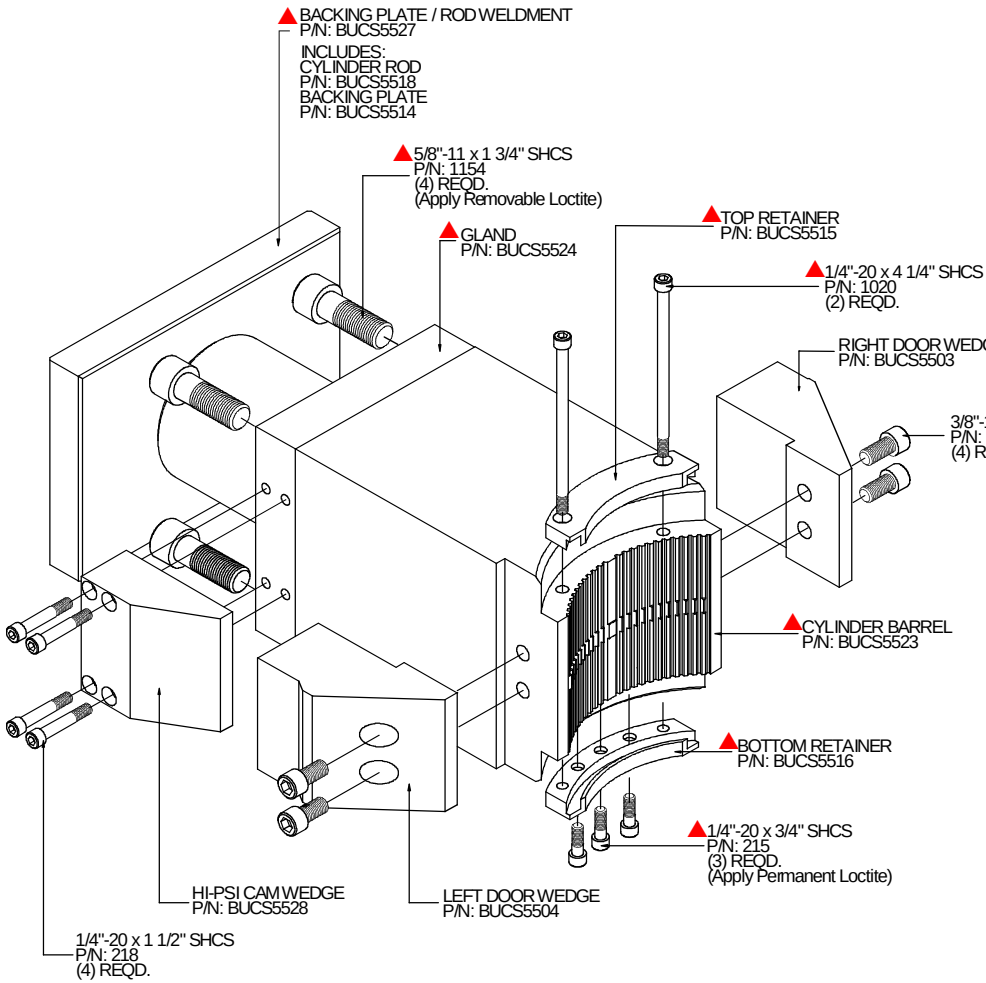
5 1/2" LOCKJAW BACKUP

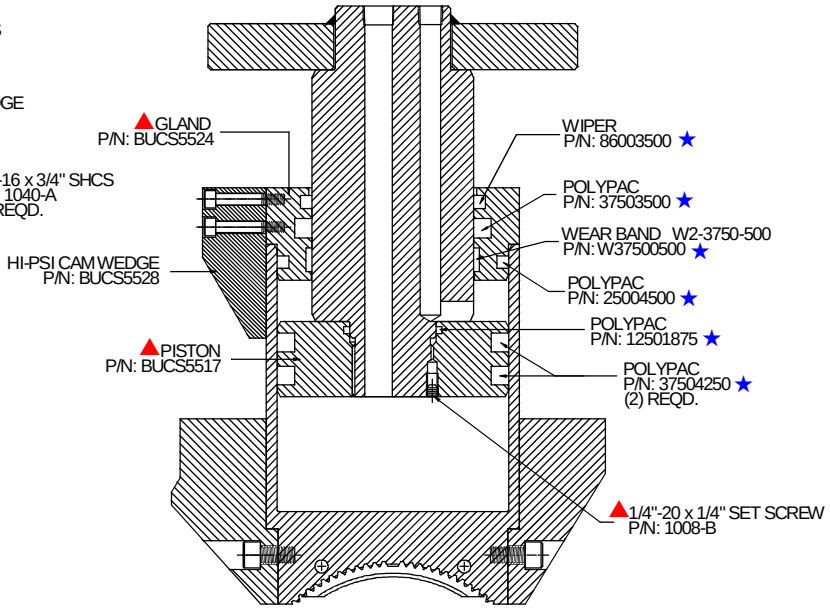
SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1	99-12-034	12/23/99

REF: S:\Equip Manuals-Dwgs\BUCS5500\Door-L rev1.wpg





TOP SECTION VIEW

★INCLUDED IN SEAL KIT NO. ASAP 2184 ▲

CYLINDER ASSEMBLY

5 1/2" LOCKJAW BACKUP

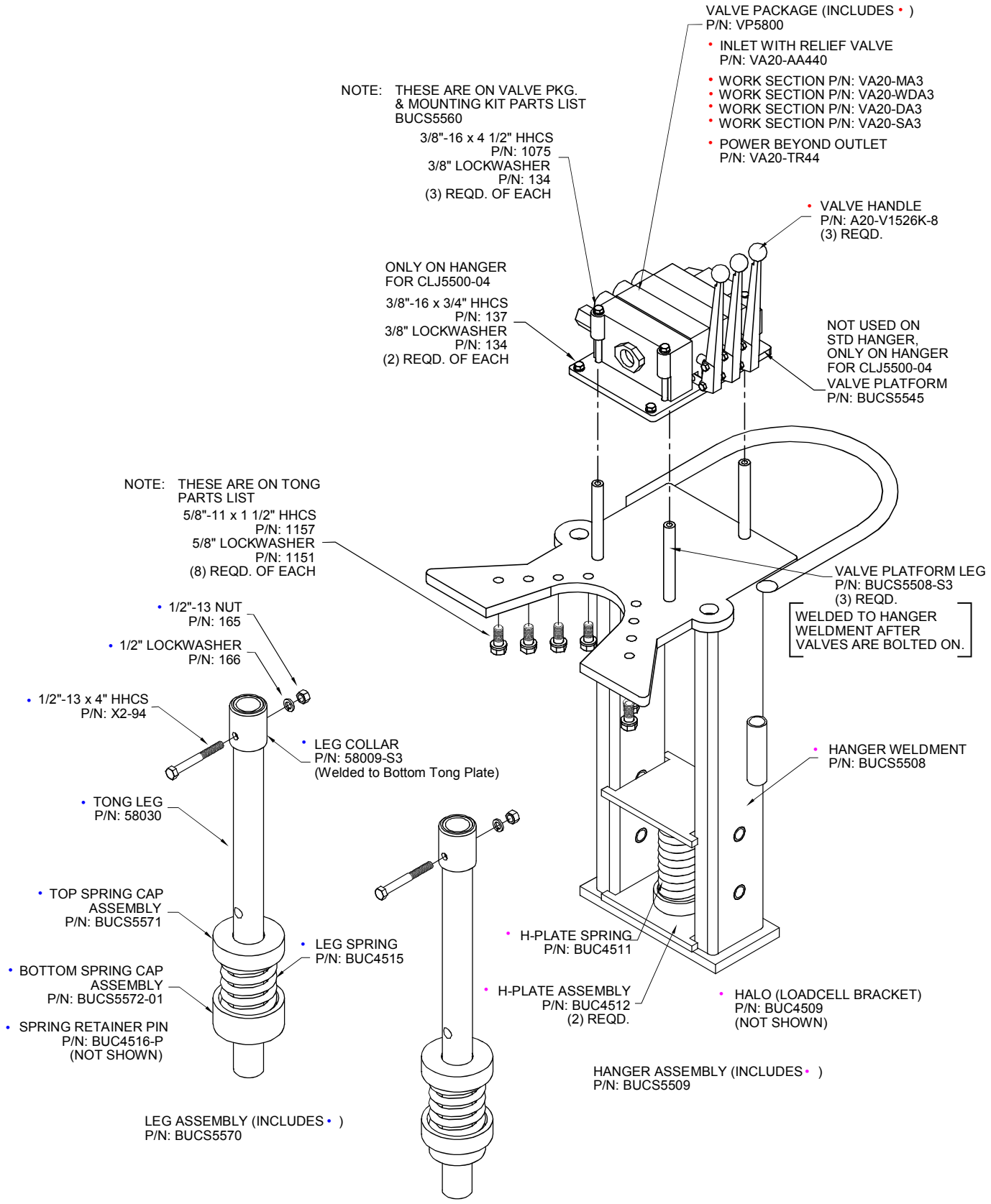
ASSEMBLY NO. BUCS5532 ▲

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
3		11/30/06

REF: P:\Manuals\Equip Manuals\Dwgs\BUCS5500\BUCS5532 rev3.wpg



MOUNTING KIT & VALVE PACKAGE

5 1/2" LOCKJAW™ TONG & BACKUP

ASSEMBLY NO. BUCS5560

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
2		04/29/02

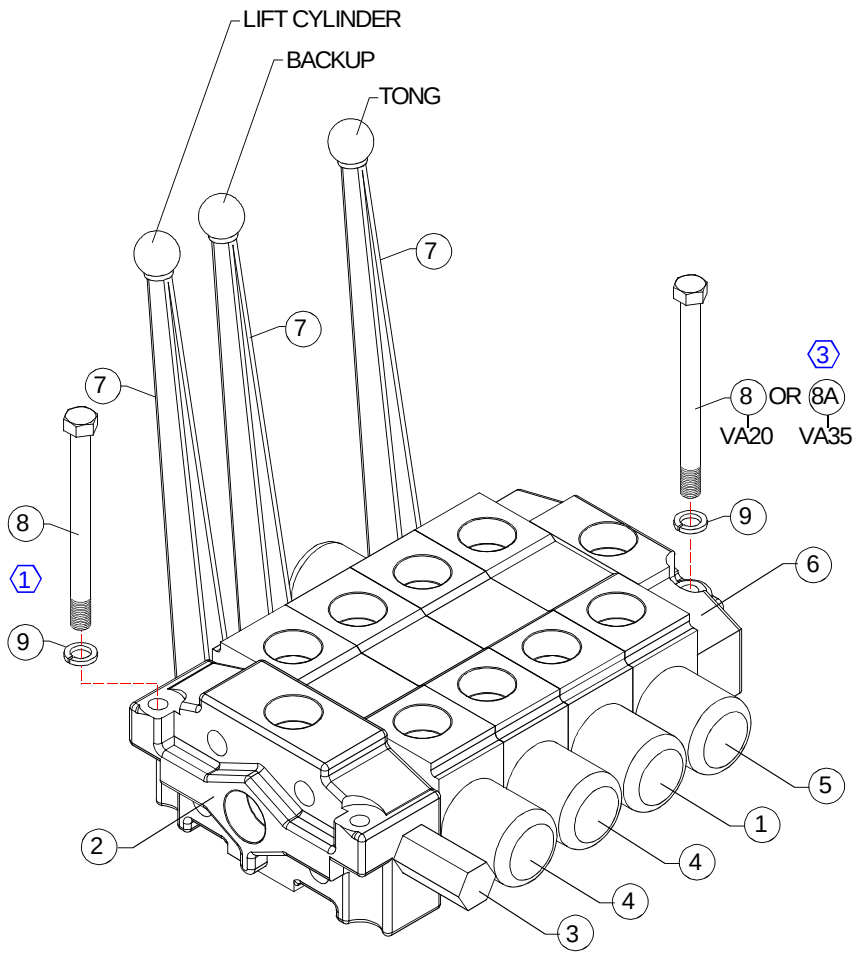
REF: S:\Equip Manuals-Dwgs\BUCS5500\Mounting Kit rev2.wpg

A20 VALVE BANK ASSEMBLY

Item #	Qty.	Part Number	Description
1	1	55201	CONTROL VALVE ASSEMBLY - MODIFIED VA20-WDA3
			BEFORE 04/15/04
2 OR	1	VA20-MOD	WORK SECTION
			AFTER 04/15/04
2	1	VA20-AA440	INLET VALVE W/O RELIEF
3	1	VA20-MRV-1	RELIEF CARTRIDGE
4	2	VA20-DA3	WORK SECTION
5	1	VA20-MA3	WORK SECTION
6	1	VA20-TR44	OUTLET SECTION
7	3	A20-V1526K-8	A20 8" HANDLE
1 8	3	1072	HHCS 3/8"-16 x 3 3/4" (COMPONENT OF KIT P/N: 4 BANK)
1 9	3	134	LOCKWASHER 3/8" (COMPONENT OF KIT P/N: 4 BANK)

A35 VALVE BANK ASSEMBLY

Item #	Qty.	Part Number	Description
1	1	14213	CONTROL VALVE ASSEMBLY - MODIFIED VA35-WDA4
			BEFORE 04/15/04
2 OR	1	VA35-MOD	WORK SECTION
			AFTER 04/15/04
2	1	VA35-AA440	INLET VALVE W/O RELIEF
3	1	DVG35-HMRV 4	RELIEF CARTRIDGE
4	2	VA35-DA4	WORK SECTION
5	1	VA35-MA4	WORK SECTION
6	1	VA35-TR55	OUTLET SECTION
7	3	A35-V1526K-8	A35 8" HANDLE
1 8	2	X2-40 3	HHCS 1/2"-13 x 4 1/4" 3
3 8A	1	X2-45	HHCS 1/2"-13 x 4 1/2"
1 9 3	3	1103	LOCKWASHER 1/2"



VALVE BANK ASSEMBLY

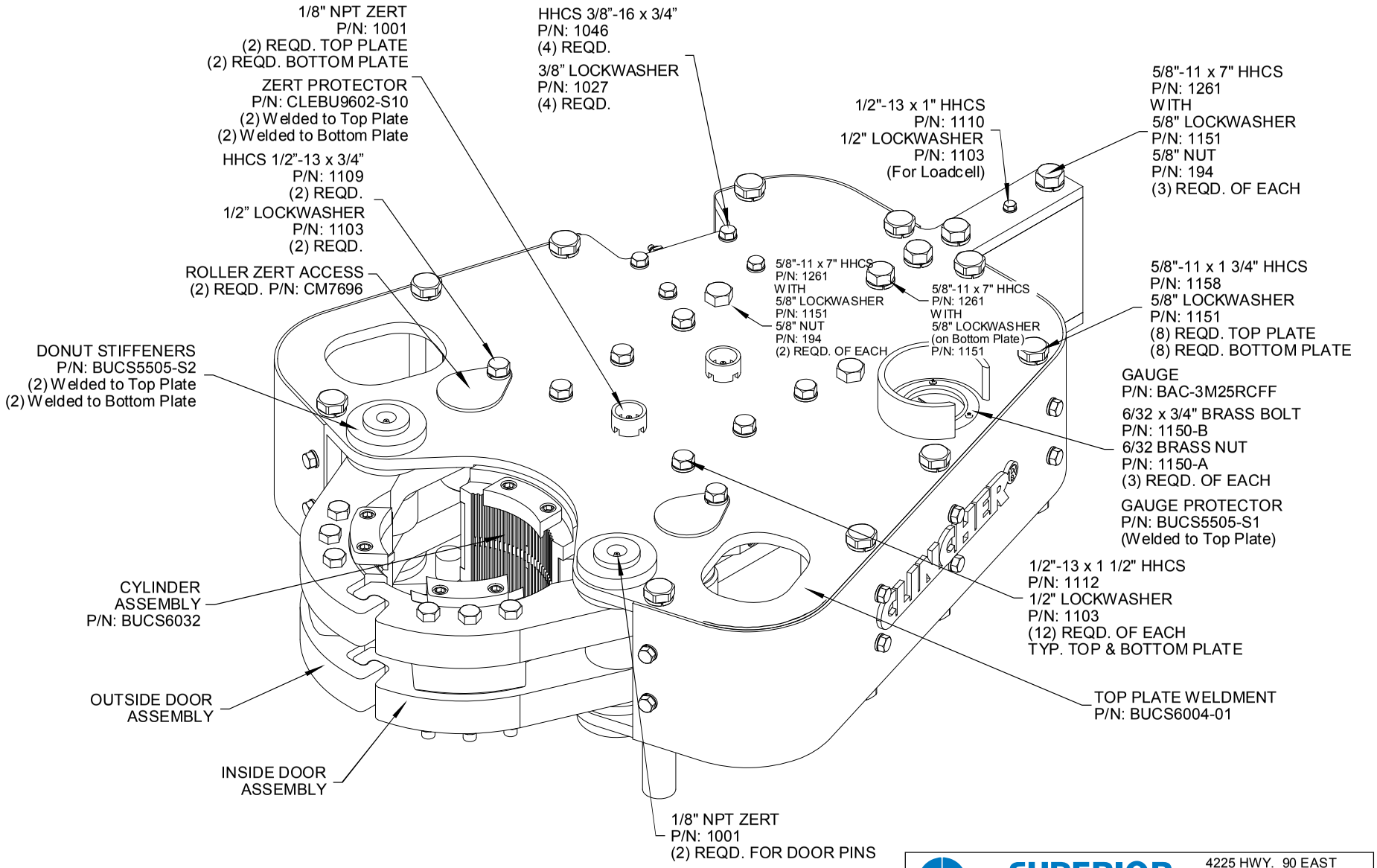
Rev.	Date	Description
4	08/19/05	Item 3 - Chg.PN from A35-MRV-1 to DVG35-HMRV; ECN#05-0064.
3	12/13/04	Item 8 - Chg. Length from 5" to 4 1/4", PN from X2-79 to X2-40.
		Item 8A - Added Part. Item 9 - Chg. Qty. from 2 to 3.
2	10/21/04	Item 1 - Added VA20-MOD & VA35-MOD for Production after 04/15/04.
1	06/10/02	Item 8 & 9 - Added Part.

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
4		08/19/05

REF: P:\Manuals\Equip Manuals\Dwgs\Valves\Valve Bank 4 rev4.wpg

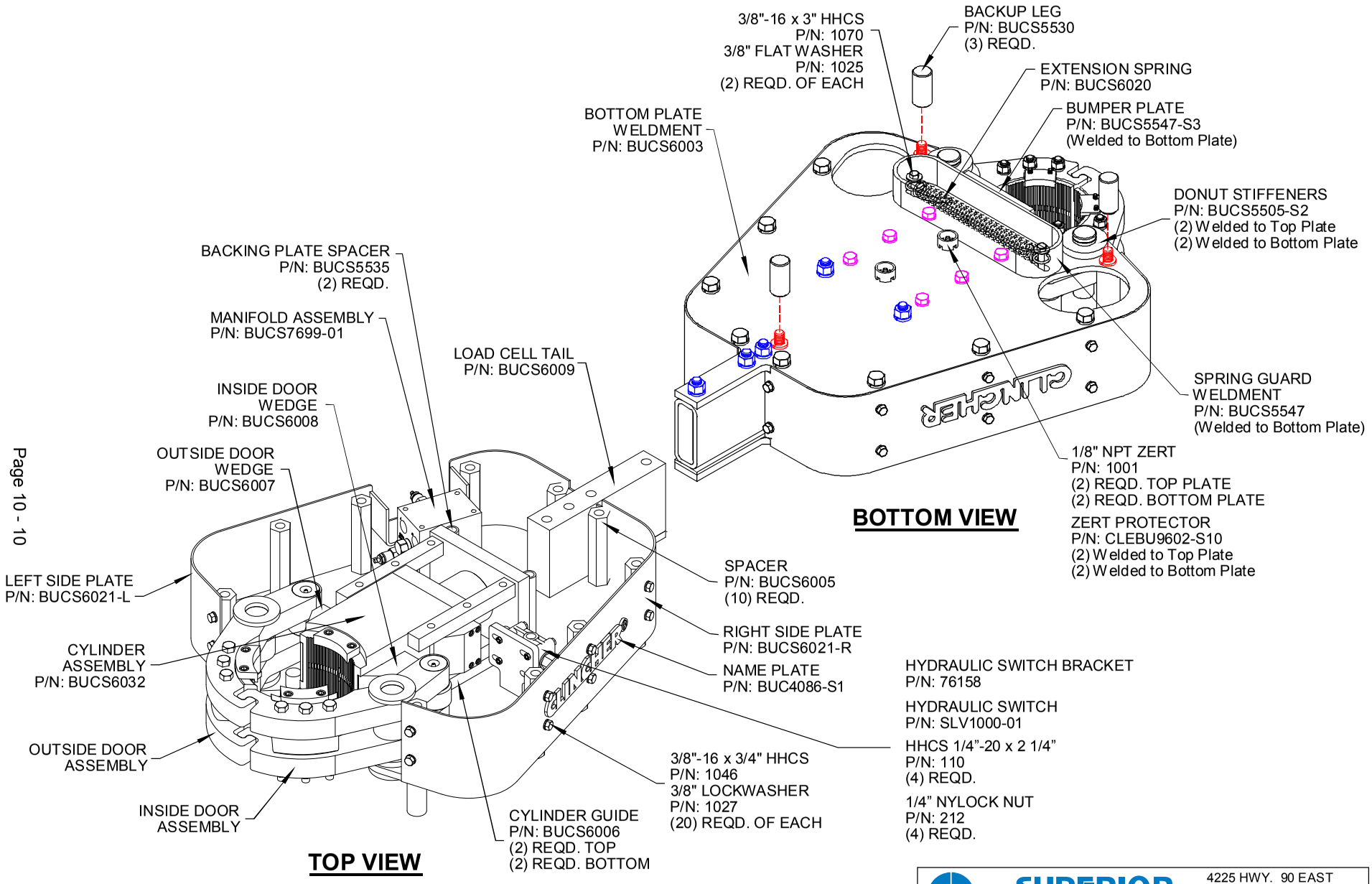


6 1/4" LOCKJAW™ BACKUP

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

		12/16/09
REV. #	LOG #	DATE

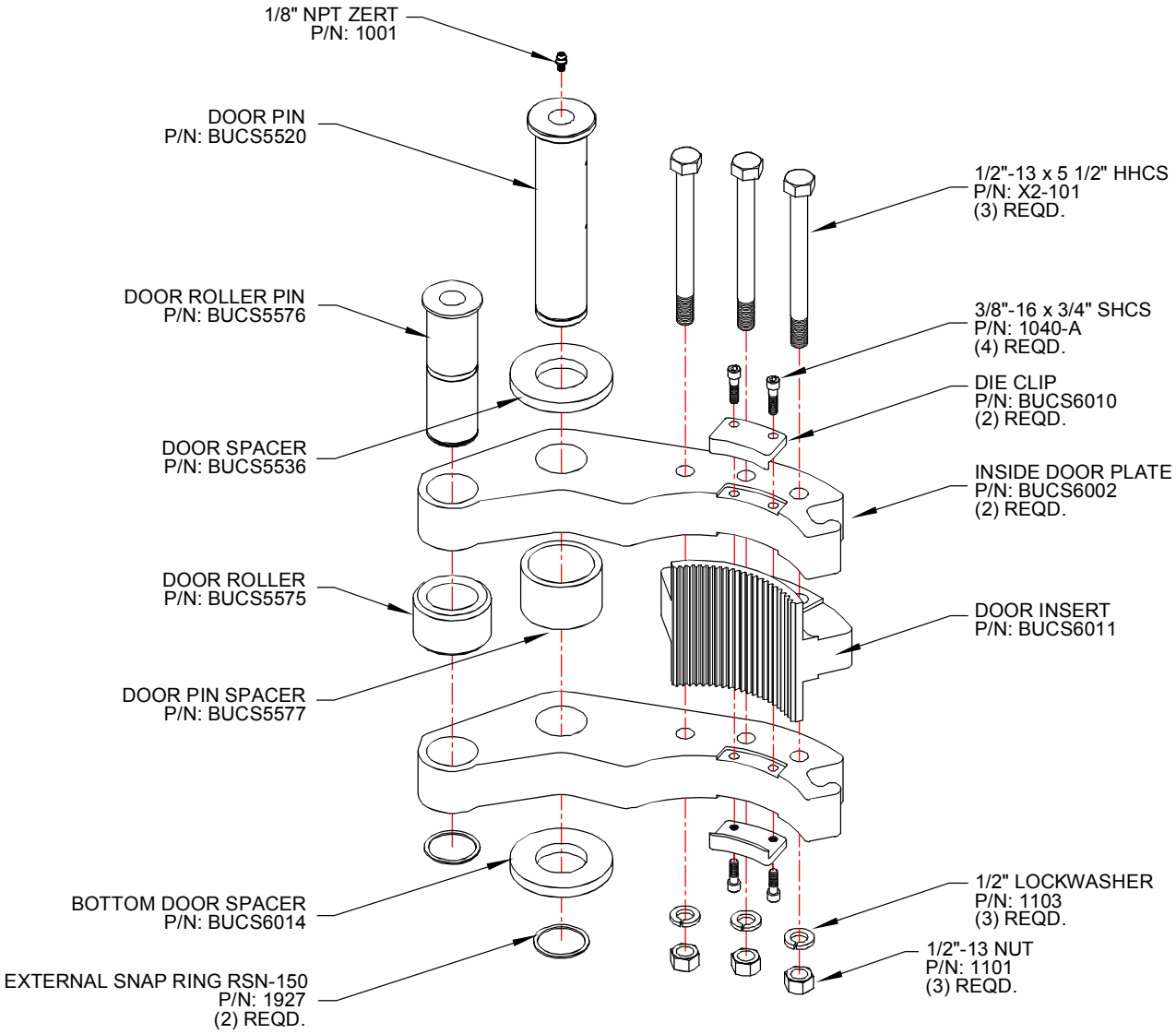


6 1/4" LOCKJAW™ BACKUP

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

		12/17/09
REV. #	LOG #	DATE



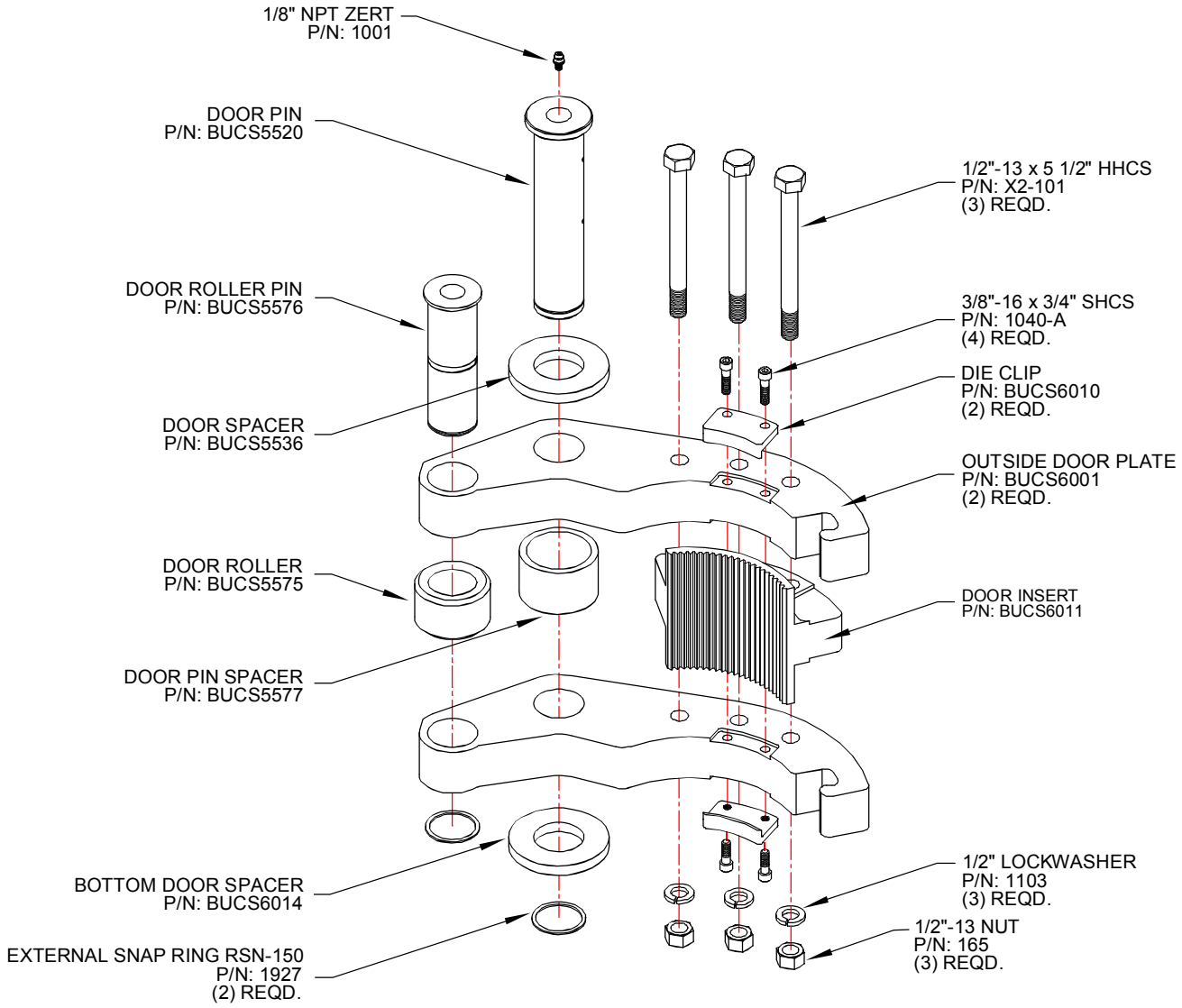
INSIDE DOOR ASSEMBLY
6 1/4” LOCKJAW™ BACKUP

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

		03/02/05
REV. #	LOG #	DATE

REF: S:\Equip Manuals-Dwgs\BUCS6250\Door Inside.wpg



OUTSIDE DOOR ASSEMBLY

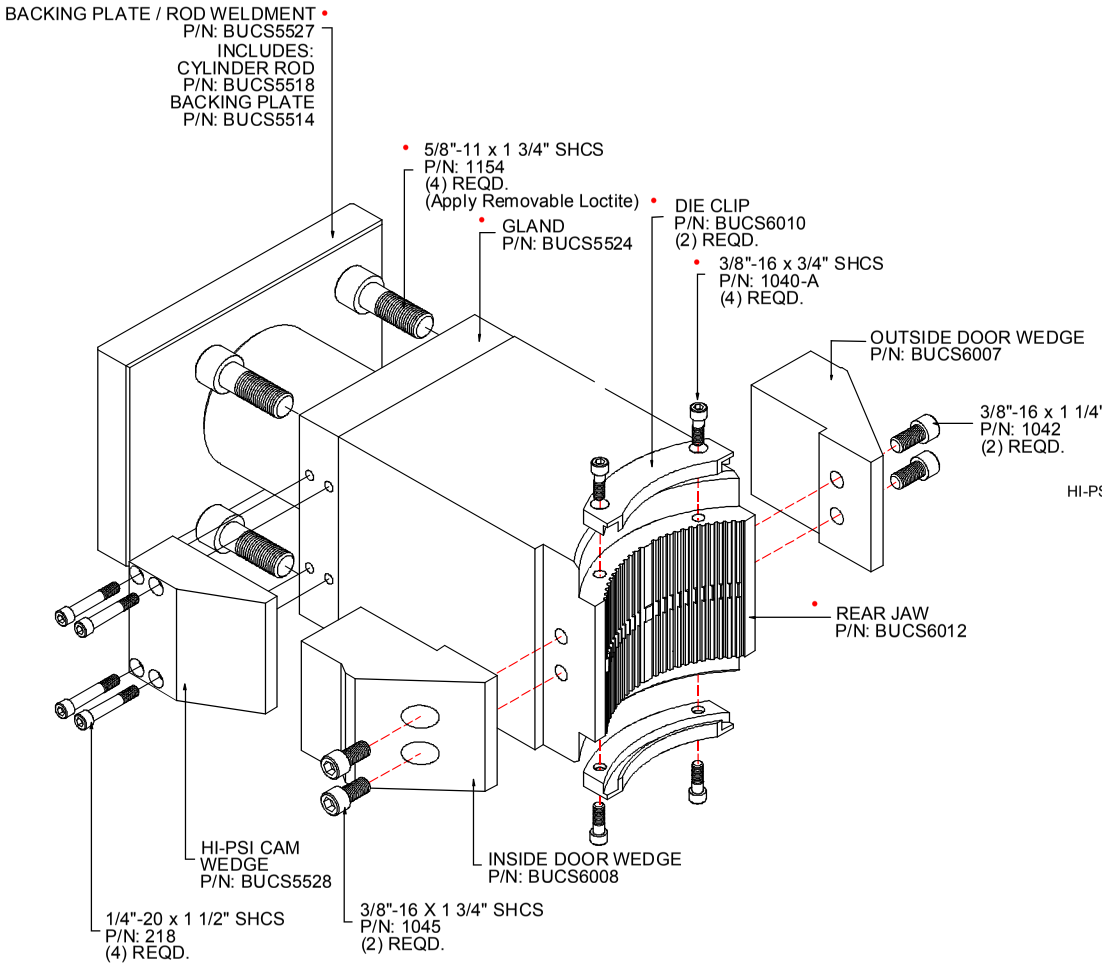
6 1/4” LOCKJAW™ BACKUP

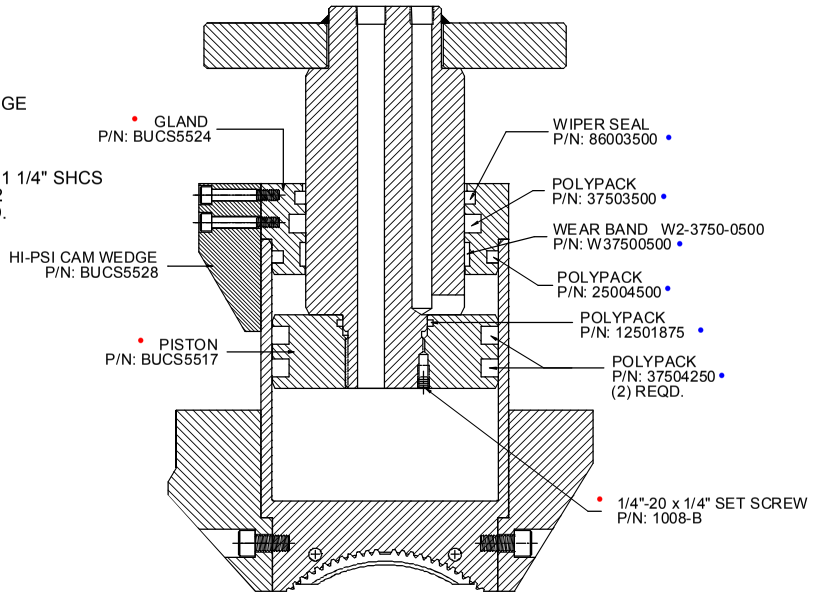
SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

		03/02/05
REV. #	LOG #	DATE

REF: S:\Equip Manuals-Dwgs\BUCS6250\Door Outside.wpg





TOP SECTION VIEW

• INCLUDED IN SEAL KIT NO. ASAP 2184 •

CYLINDER ASSEMBLY

6 1/4" LOCKJAW™ BACKUP

ASSEMBLY NO. BUCS6032 •

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

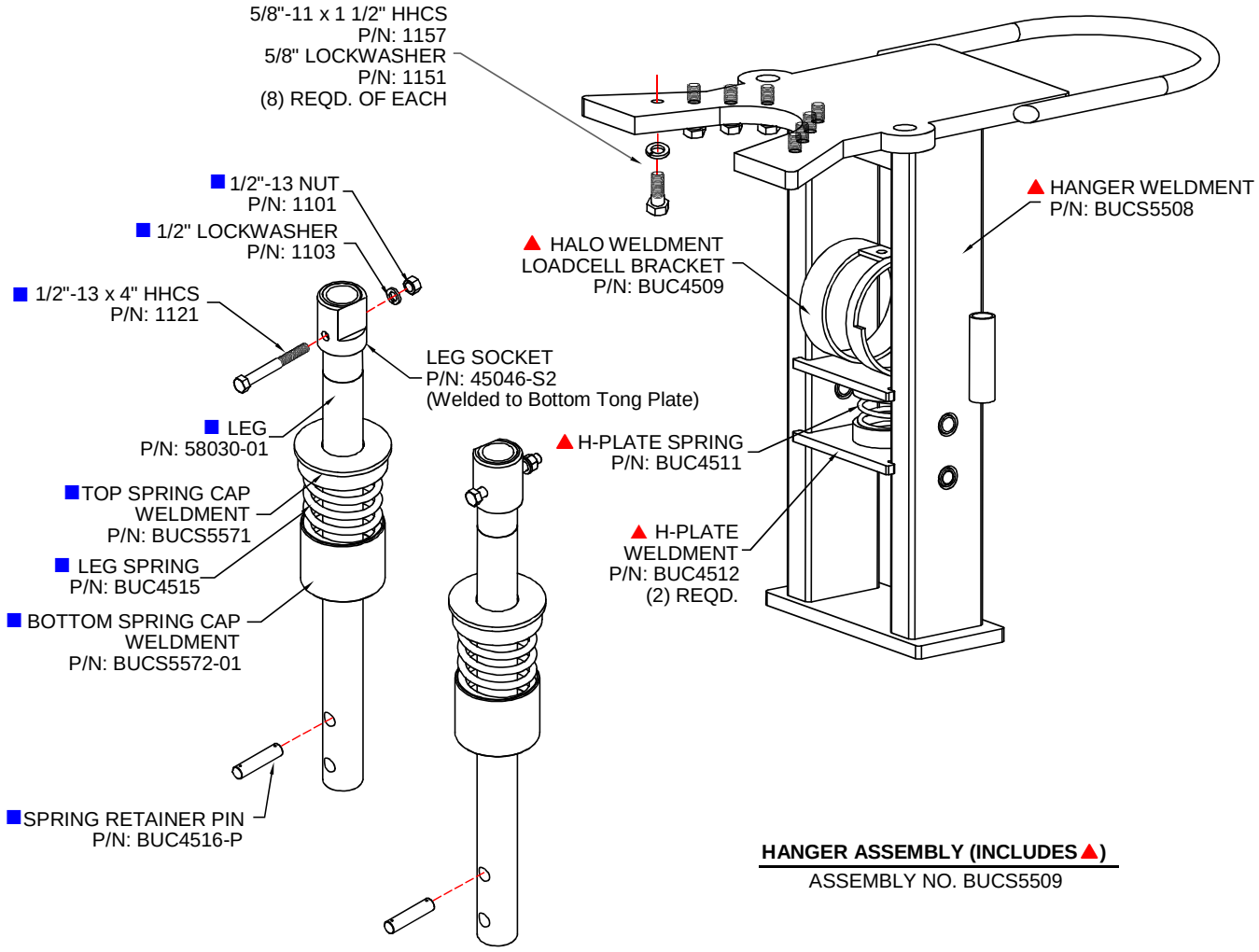
		03/01/05
REV. #	LOG #	DATE

REF: S:\Equip Manuals-Dwgs\BUCS6250\Cylinder.wpg

NOT SHOWN:

SEE VALVE BANK ASSEMBLY

VALVE PACKAGE
P/N: VP5800-01



LEG ASSEMBLY (INCLUDES ■)

ASSEMBLY NO. BUC5570-01
(2) REQD.

HANGER ASSEMBLY (INCLUDES ▲)

ASSEMBLY NO. BUCS5509

MOUNTING KIT ASSEMBLY
6 1/4" LJ BACKUP
TO 5 1/2" HT TONG

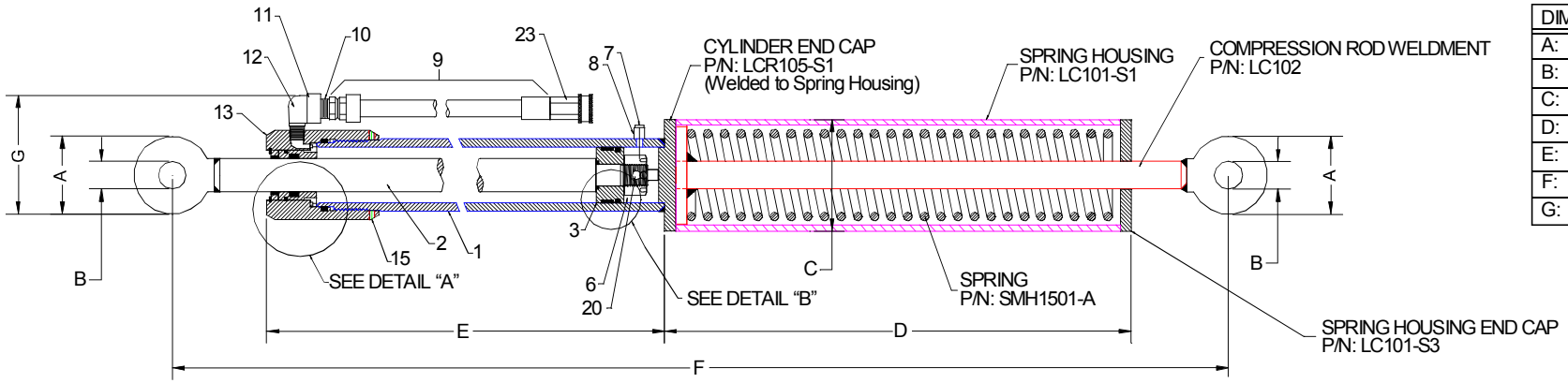
ASSEMBLY NO. MKBUCS6250

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

		07/20/06
REV. #	LOG #	DATE

REF: P:\Manuals\Equip Manuals\Dwgs\BUCS6250\MKBUCS6250.wpg

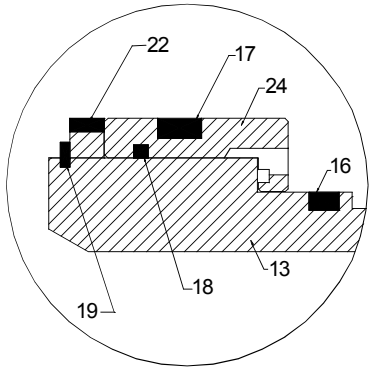


DIMENSIONAL DATA
A: 3 1/2" x 3/4"
B: 1 1/4"
C: 5"
D: 21"
E: 40 1/4"
F: 70"
G: 5 5/16"

i SEAL KIT P/N: ASAP100

BILL OF MATERIALS

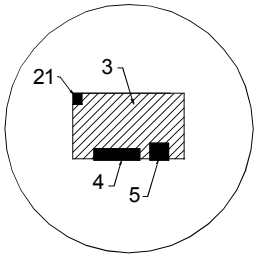
	Item	Qty.	Description	P/N
	1	1	HYD/AIR CYLINDER BARREL	LCR105
	2	1	CYLINDER ROD WELDMENT	LCR112
	3	1	PISTON	LCR106
i	4	1	WEARBAND	W25000500
i	5	1	POLYPACK 2 1/8" x 2 1/2" x 3/16"	18702125
	6	1	1"-12 SLOTTED HEX NUT	1209
	7	1	1/2" FLUSH PLUG W/ 1/8" ORIFICE	1657
	8	1	1/2" HALF COLLAR	1380
	9	1	1/2" x 120" HOSE ASSY. MNPT x FJIC	LCR107-A
	10	1	3/8" MNPT x 1/2" MJIC ADAPTER	1466
	11	1	3/8" STREET EL W/ORIFICE	LCR109
	12	1	3/8" STREET EL	1450
	13	1	GLAND CAP	LCR119
	14	---	---	---
	15	2	1/4"-20 x 3/8" SET SCREW	1015
i	16	1	O RING 2 7/8"ID, 3 1/4"OD, 3/16"W	2-336
i	17	1	POLYPACK 1 1/2" x 1 7/8" x 3/8"	18701500-375
i	18	1	O RING 2"ID, 2 1/4"OD, 1/8"W	2-226
	19	1	INTERNAL SNAP RING (N-1300-225)	1947
	20	1	1/4" x 1 1/2" ROLL PIN	1008-A
i	21	1	O RING 1"ID, 1 1/4"OD, 1/8"W	2-214
i	22	1	SEAL NP CR14938	CR14938
	23	1	1/2" FEMALE SNAPTITE Q.D.	1430
	24	1	GLAND	LCR113



DETAIL "A"
SCALE: 3X

SPECIFICATIONS - A

MAXIMUM SPRING TRAVEL (PRELOAD TO SOLID)	8.0 in.
MAXIMUM ALLOWABLE LOAD (SPRING FULLY COMPRESSED)	3.043 lbs.
PRESSURE REQUIRED TO LIFT MAXIMUM ALLOWABLE LOAD	969 psi
MAXIMUM ALLOWABLE INTERNAL PRESSURE	3,000 psi
CYLINDER I.D.	2.50 in.
ROD O.D.	1.5 in.
STROKE	34.94 in.



DETAIL "B"
SCALE: 3X

LIFT CYLINDER ASSEMBLY

ASSEMBLY NUMBER LCR100-A

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1		04/29/02

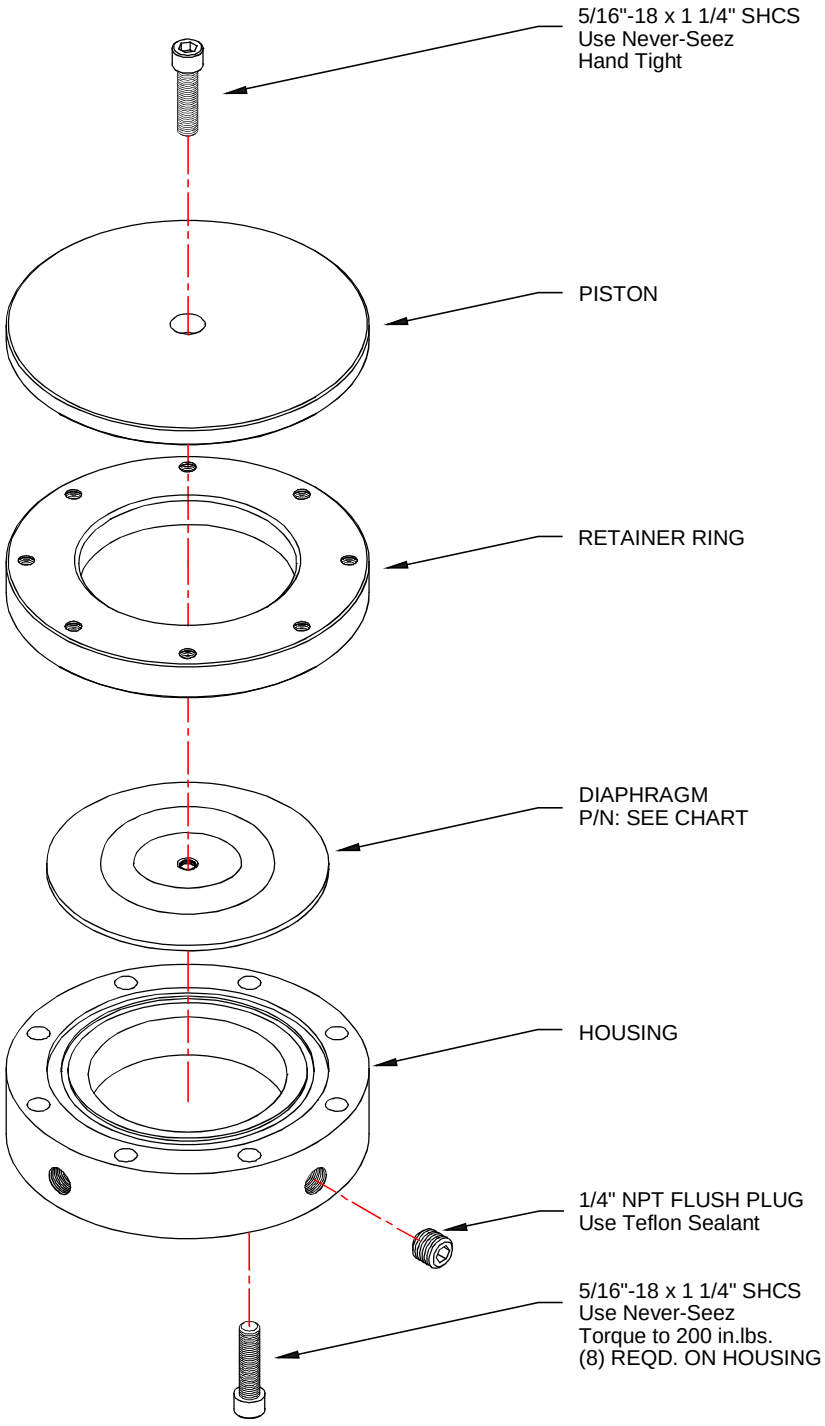
REF: S:\Equip Manuals\Dwgs\LCR\LCR100-A rev1.wpg

CLINCHER® LOAD CELL AND TORQUE GAUGE ASSEMBLIES

The **CLINCHER® LOCKJAW™** Tong and Backup are available in versions which accommodate compression load cells or tension style load cells. All information contained in this Technical Manual refers to products which utilize compression load cells. Contact SUPERIOR for information concerning products using tension load cells.

Part Number	SM20-29-C
Torque Rating	20,000 ft lbs
Handle Length	29 inches
Load cell Type	Compression
Load cell Manufacturer	SUPERIOR MANUFACTURING & HYDRAULICS
Load cell Part Number	CLC200
Torque Gauge Mfr.	TOTCO or equivalent
Torque Gauge Size	6"
Gauge Mount	AL@ Bracket
Hose Length	6 ft.
Assembly Documentation	Calibration Certificate

CLINCHER® Load cells and Torque Gauges are produced by several manufacturers. The information provided by MD TOTCO or Acadiana Oilfield Instruments may not be applicable to all torque gauges or load cells. This reference information is provided with the permission of MD TOTCO and Acadiana Oilfield Instruments.



LOAD CELL SIZE	DIAPHRAGM P/N
6.44 SQ.IN.	CLC203
8.0 SQ.IN.	CLC205
12.0 SQ.IN.	CLC206
16.1 SQ.IN.	CLC207
25.0 SQ.IN.	CLC208

COMPRESSION LOAD CELL

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

THIS DOCUMENT IS THE PROPERTY OF SUPERIOR MANUFACTURING & HYDRAULICS AND IS CONSIDERED CONFIDENTIAL. THIS INFORMATION MAY NOT BE USED, DISCLOSED, COPIED, OR REPRODUCED IN ANY FORM, WITHOUT THE EXPRESS WRITTEN CONSENT OF SUPERIOR MANUFACTURING & HYDRAULICS.

REV. #	LOG #	DATE
1		07/03/02

REF: P:\Manuals\Equip Manuals\Dwgs\Load Cell Comp rev1.wpg

CLINCHER® LOAD CELL AND TORQUE GAUGE ASSEMBLIES

To request copy of TOTCO Instruction Manual No. 26-61 - Joint Torque System, please contact:

Superior Manufacturing & Hydraulics
4225 Hwy. 90 East
Broussard, LA 70518
Phone: 337-837-8847
Fax: 337-837-8839
www.superior-manf.com

SECTION 13 RINEER MOTOR INFORMATION

To request copy of Rineer Motor Service Manuals, please contact:

Superior Manufacturing & Hydraulics
4225 Hwy. 90 East
Broussard, LA 70518
Phone: 337-837-8847
Fax: 337-837-8839
www.superior-manf.com

SECTION 14 VALVE TECHNICAL DATA

To request copy of Valve Technical Data, please contact:

Superior Manufacturing & Hydraulics
4225 Hwy. 90 East
Broussard, LA 70518
Phone: 337-837-8847
Fax: 337-837-8839
www.superior-manf.com